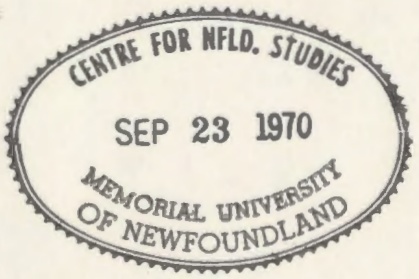
SOCIOECONOMIC VERSUS EDUCATIONAL INPUTS AS RELATED TO GRADE SIX READING ACHIEVEMENT IN RURAL NEWFOUNDLAND

HECTOR A. POLLARD


CENTRE FOR NFLD. STUDIES
SEP 23 1970
MEMORIAL UNIVERSITY
OF NEWFOUNDLAND

SOCIOECONOMIC VERSUS EDUCATIONAL INPUTS AS RELATED TO GRADE SIX READING ACHIEVEMENT IN RURAL NEWFOUNDLAND

A Thesis

Presented to

The Department of Educational Administration

Memorial University of Newfoundland

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

by

Hector A. Pollard

February 1970

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

The undersigned certify that they have read, and recommend for acceptance, a thesis entitled SOCIOECONOMIC VERSUS EDUCATIONAL INPUTS AS RELATED TO GRADE SIX READING ACHIEVEMENT IN RURAL NEWFOUNDLAND submitted by Hector A. Pollard in partial fulfilment of the requirements for the degree of Master of Education.

_____

(Supervisor)

_____

(Internal Reader)

_____

(External Reader)

Date_____

ACKNOWLEDGEMENTS

The writer gratefully acknowledges the help of the many people who cooperated with him to make this study possible. Appreciation is expressed to the school authorities, teachers, pupils and parents in Trinity Bay, Newfoundland, in whose area the investigation was carried out. The writer expresses his gratitude to Dr. H. W. Kitchen, chairman of the thesis committee, for his direction and helpful criticism during the development and completion of this thesis, and to the other members of the committee for their many helpful suggestions.

A special thank you to my wife for her understanding and encouragement.

ABSTRACT

The primary purpose of this study was to determine whether reading achievement in rural Newfoundland was related more to socioeconomic than to educational input variables.

The study was carried out among the Grade Six pupils in Trinity Bay. Information was collected on pupils, parents and teachers by means of questionnaires. Intelligence quotients were determined for all pupils by means of a standardized intelligence test while a standardized reading test was administered to gather information on the dependent variables used in the study — vocabulary and paragraph comprehension,

Intelligence was found to be the independent variable most closely related to reading achievement. Also, reading achievement was found to be much more related to home, than to school environment.

The testing of the major hypotheses showed very clearly that the socioeconomic variables of mother's education, father's occupation, size of family and days absent,were more closely related to reading achievement than were the educational input variables of teacher's qualifications, size of school and age of school,

The implication here is perhaps not that teachers should not be better qualified, or that newer and larger schools should not be constructed, but that the greater importance of the home to reading achievement must be fully recognized and utilized. In the long run, programs of economic and social development together with agressive programs of adult and early childhood education may have a greater impact on reading achievement than policies geared solely to improving the supply of qualified teachers and new buildings.

TABLE OF CONTENTS

CHAPTER PAGE

APPENDIXES (cont'd)

LIST OF TABLES

TABLE PAGE

CHAPTER I

THE PROBLEM

This study deals with variables related to reading achievement in rural Newfoundland. It measures the strength of the relationships of reading achievement with such socio-economic variables as father's occupation, mother's education and size of family, and with such educational input variables as teacher's qualifications, class size and age of building. It attempts to find out whether the socio-economic variables are more closely related to reading achievement than are the educational input variables.

It seems generally agreed that the most basic skill the elementary school is expected to develop is reading. But education, of which reading is a very essential ingredient, is a long term social process occuring microscopically in a definite and describable community. Rogoff suggests that education, and ultimately the social class achievement of youngsters represents family expectations come true. The real locus of social mobility, she continues, is the living room, not the class room.[1] Burkhead in a recent

---

[1]Natali Rogoff, "Local Social Structure and Education Selection, "Education, Economy and Society, (second edition; New York: The Free Press, 1965), p. 241.

study of school inputs and outputs supports this view. He contends that the school is not the only developer of human resources, and to insist that it is, he maintains, is ridiculously unfair to educators. However, it would not be appropriate to argue that the school's contribution to that development is so held back by environmental and societal influences that only these influences are important. He concludes that it would seem reasonable to suppose, for example, that the student's attitudes toward school and formalized training are fairly well shaped by happenings in the classroom.[1]

Thus it would appear that reading achievement, or the lack of it, cannot be attributed to one single factor or variable, but is apparently the result of many interacting variables including intelligence, teacher's qualifications, the child's physical condition, and other educational and environmental inputs.

I. READING ACHIEVEMENT IN NEWFOUNDLAND

A survey of the level of reading achievement among Grade IX pupils in Newfoundland was conducted by the Department of Education in 1964 using the Metropolitan

---

[1] Jesse Burkhead with Thomas G. Fox and John W. Holland, Input and Output in Large-City High Schools (New York: Syracuse University Press, 1967), p. 12.

Achievement Tests. Median achievement was reported to be approximately one year below test norms, with pupils in regional high schools and large all-grade schools scoring appreciably higher than those in central high schools and small all-grade schools.[1]

In another survey conducted by the Department of Education on a ten per cent sample of Grade VI pupils in Newfoundland schools in June 1965 The Dominion Achievement Tests of vocabulary and comprehension were used, and similar results were found. The norm, based on rural schools in Ontario, was 6.9, but the median for the complete Newfoundland sample was 6.1 in vocabulary and 6.0 in comprehension. In other words, Newfoundland pupils were, on the median, eight months behind their counterparts in rural Ontario on vocabulary, and nine months behind on comprehension.[2]

A study conducted among Grade VIII pupils for the Newfoundland Royal Commission on Education and Youth reported significant weaknesses, especially in reading comprehension and arithmetic problem solving sections of the Iowa Tests of Basic Skills. Pupils outside St. John's

---

[1] News Letter, Department of Education, St. John's, Vol. 16, No. 1 (September, 1964) and Vol. 16, No. 3 (November, 1964).

[2] News Letter, Department of Education, St. John's, Vol. 17, No. 2 (October, 1965).

except for those in large elementary schools, made lower scores than St. John's pupils, with the lowest scores being made by pupils in small all-grade schools.[1]

Neither of the three foregoing studies attempted to control or to measure the effects of such productivity - related variables as teachers'qualifications or the socio-economic level of pupil, family or community. However, from his study of differences in educational productivity among census divisions of each of the Atlantic Provinces, Kitchen reports:

> Specifically, low educational outputs and high retardation rates are related more to socio-economic and demographic variables such as adult illiteracy, family size, and non-employment than to such educational input variables as the qualifications and salaries of teachers.

He also found that illiteracy in Newfoundland is twice the national average, and it is much more prevalent in smaller settlements than in the larger ones.[2]

II. PURPOSES OF THE STUDY

The major purpose of this study is to determine whether socio-economic variables bear a higher relationship

---

[1] Province of Newfoundland and Labrador, Report of the Royal Commission on Education and Youth Volume 1, (St. John's: The Queen's Printer, 1967), pp. 38 - 43

[2] H. W. Kitchen, A Preliminary Study of Demographic and Socio-Economic Factors in the Atlantic Provinces and their Relationships to Measures of Educational Output, (Mimeographed, October 1967), p. 1.

with reading achievement than do certain measures of educational input. Several other questions will also be explored:

(1) What is the relationship between sex and reading achievement?

(2) What is the relationship between verbal intelligence and reading achievement?

(3) What is the relationship between fathers' occupational status and pupils' reading achievement?

(4) What is the relationship between mothers' education and reading achievement of pupils?

(5) What is the relationship between the size of the family and reading achievement?

(6) What is the relationship between absenteeism and reading achievement?

(7) What is the relationship between teachers' qualifications and pupils' reading achievement?

(8) What is the relationship between the size of school and reading achievement?

(9) What is the relationship between the age of the school building and reading achievement?

III. SIGNIFICANCE OF THE STUDY

The surveys and studies mentioned in dealing with the problem area of the study point out very forcefully that there is a deficiency in reading achievement in Newfoundland

schools, and also, that the deficiency is probably due to more than the low supply of qualified teachers. It now seems important that an intensive study be carried out in rural Newfoundland (where the greatest reading problem seems to be) with the aim of quantifying the relative influences of certain identified variables on reading achievement. Such information will, it is hoped, suggest courses of action that will lead to a maximum alleviation of the reading problem in this province.

IV. OPERATIONAL DEFINITIONS

This section contains a brief description, operationally defined, of each of the variables used in the study. Further details are contained in subsequent chapters.

Reading Achievement

Reading achievement refers to the scores obtained by a pupil on The Nelson Reading Test 1962 Revised Edition, Form A. A copy of this test is contained in Appendix G.

Reading Comprehension

The raw score obtained by a pupil on the Paragraph Comprehension sub-test of The Nelson Reading Test 1962 Revised Edition was used as an indicator of achievement in reading comprehension.

Vocabulary

The raw score obtained by a pupil on the Vocabulary sub-test of The Nelson Reading Test 1962 Revised Edition was used as an indicator of achievement in vocabulary.

Verbal Intelligence

Verbal intelligence refers to a pupil's deviation intelligence quotient as determined by his score on The Lorge-Thorndike Intelligence Test, Form 3AV. A copy of this test is contained in Appendix H.

Father's Occupation

The occupation of the child's father or guardian was obtained from a questionnaire that was sent to the home. Occupations were then transformed into numbers, using the Blishen Occupational Class Scale. This scale is contained in Appendix M.

Mother's Education

Mother's education is used as an indicator of socio-economic status, and was rated on an 18 point scale based on the highest grade obtained in an institution of formal learning. A questionnaire, a copy of which is contained in Appendix I, was sent to the home to obtain the necessary information.

Size of Family

The number of children who were under eighteen and

living at home was used as the size of each pupil's family. The questionnaire shown in Appendix I was used to get the information on family size.

Absenteeism

Absenteeism, the number of days a pupil was absent from September 6, 1967 to April 30, 1968, was supplied by the teacher from the classroom register. See Appendix J.

Teacher's Qualifications

An eight-point length of training scale based on the Newfoundland Department of Education grading system, was used for teacher's qualifications.[1] A questionnaire was used to collect this information. See Appendix J and page 61.

Size of School

The indicator used for size of school was the enrolment in grade six in each classroom used in the study. The questionnaire used to collect this information is in Appendix J.

Age of School

Age of school referred to the number of years the school building had been used and was obtained from the teachers. See Appendix J.

---

[1] A composite score of the training of all a child's teachers of the first six grades, although perhaps a somewhat more meaningful index would have been much more difficult to obtain.

V. DELIMITATIONS

A number of delimitations should be noted. First, the study deals only with grade six pupils. Secondly, all reside in one section of Newfoundland, namely Trinity Bay, an area, however, that is rather typical of rural Newfoundland. Thirdly, the subjects are rural rather than urban pupils. A companion study deals with variables underlying the reading achievement of grade four boys in St. John's.[1]

VI. ORGANIZATION OF THE REPORT

Chapter II of this report reviews the literature concerned with the relationship of reading achievement with sex, intelligence, and certain social, economic and other environmental factors. Each hypothesis is placed at the end of the literature upon which it is based. Chapter III contains an outline of the procedure followed in conducting the study, and a description of the statistical procedures used in analyzing the data. Chapter IV contains a descriptive analysis of the samples and the underlying variables. Chapter V reports the statistical testing of the

---

[1] Geraldine Roe, "Socioeconomic Versus Educational Inputs as Related to Grade Four Reading in Urban Newfoundland" (Master's thesis in process, Memorial University of Newfoundland, St. John's, 1969).

hypotheses and the ensuing findings. The final chapter summarizes the study, discusses conclusions drawn from it, and makes specific recommendations.

CHAPTER II

THE HYPOTHESES AND THE LITERATURE SUPPORTING THEM

This chapter is divided into sections reporting the literature underlying the hypothesized relationship between each of the input variables and reading achievement. The major hypothesis of the study, that socio-economic inputs are more related to reading achievement than are educational inputs, follows the sections dealing with the minor hypotheses.

I. SEX AND READING ACHIEVEMENT

Gates conducted a major study of the relationship between reading achievement and sex.[1] This section describes in detail that study.

Some 6,646 boys and 6,468 girls in Grades 2 through 8 were given the three Gates Reading Survey Tests: Speed of Reading, Reading Vocabulary, and Level of Comprehension. The tests were given in 1957 in twelve school systems in ten states of the United States of America.

The group in the study was approximately typical in

---

[1]Arthur I. Gates, "Sex Differences in Reading Ability, "Elementary School Journal, Vol. 61 (May 1961), pp. 431 - 434.

I.Q., socioeconomic level, and other pertinent respects. Sex differences in reading achievement because of grading would have been revealed because in the school systems selected for the study children repeated grades relatively infrequently, and the results for each grade were analyzed separately.

In each of the twenty-one comparisons (three tests for seven grades) the mean raw score for girls was higher than the mean raw score for boys, and most of the differences were significant. For grade six the information is summarized in Table I.

When the differences in raw scores were converted into differences in reading grades, based on grade norms, it was found that in both speed and vocabulary the girls were superior by about 0.3 reading grades in Grades 5 and 6. The same superiority of girls over boys was found in reading comprehension.

The usual explanation that girls are superior to boys in reading because they mature earlier seems unlikely since the superiority of girls appeared to be, on the whole, as great in the upper grades as in the lower grades. Gates contends that his data suggests an environmental rather than an hereditary explanation for girls' superiority over boys in reading achievement. While girls have more and earlier incentives and opportunities to learn to read, boys

TABLE I

GATES' SCORES OF GRADE SIX BOYS AND GIRLS ON THREE READING TESTS

Test	Number	Mean	Standard
Speed:			
Girls.	818	17.14	7.67
Boys	848	15.18	7.24
Difference ...	...	1.96[2]	0.43
Vocabulary:			
Girls.	818	31.66	10.01
Boys	848	29.02	11.30
Difference . .	...	2.64[2]	-1.29[2]
Comprehension:			
Girls.	818	26.22	8.00
Boys.	848	24.42	9.40
Difference . .	...	1.80[2]	-1.40[2]

*The superscript[1] indicates statistical significance at the .05 level, [2] at the .01 level. No superscript indicates statistical significance at the .05 level was not attained.

find little or no early need for learning to read and consequently remain conspicuously in the poor reading group throughout the grades.

Other studies report similar findings to Gates' and it is expected that results of the present study will further confirm the difference.

Hypothesis I

The performance of girls will be higher than that of boys on vocabulary.

Hypothesis II

The performance of girls will be higher than that of boys on comprehension.

Because of the expected differences in reading achievement by sex, the remaining hypotheses will be tested for boys, for girls, and then for boys and girls together.

II. READING ACHIEVEMENT AND INTELLIGENCE

Since intelligence is the outward manifestation of the 'cerebral processes' used in reading, it can be assumed that the two should be related.

Witty and Kopel reported that generally there is a correlation of about .6 between reading-test scores and in-

telligence-test scores. Although they deemed this to be a significant relationship, they contended that it "was too low to permit more than a chance of accuracy" in predicting one from the other.[1] Another study has shown that a correlation of .25 exists between mental age according to the Stanford-Binet intelligence test and reading achievement at the end of the first school year.[2]

Monroe and Backus stated that "reading tests usually show a fairly high, but by no means perfect correlation with intelligence tests. Children who are retarded in general intelligence are usually retarded in reading."[3]

Other investigations, by Coleman[4], Shaw[5], and Gough[6], indicated a definite relationship between intellectual ability and scholastic achievement.

---

[1]Paul Witty and David Kopel, Reading and the Educative Process (Boston: Ginn and Co., 1939), p. 225.

[2]Arthur I. Gates and Guy L. Bond, "Reading Readiness: A Study of Factors Determining Success and Failure in Beginning Reading, "Teacher's College Record, XXXVII (May 1936), p. 680.

[3]Marion Monroe and Bertie Backus, Remedial Reading: A Monograph in Character Education (Cambridge: Houghton Mifflin Co., 1937), p. 21.

[4]H. A. Coleman, "Relationship of Socio-Economic Status to the Performance of Junior High School Pupils, "Journal of Experimental Education, No. 9, (1940), pp. 61-63.

[5]Duane Shaw, "The Relation of Socio-Economic Status to Educational Achievement in Grades Four to Eight," Journal of Educational Research, No. 37, (1943), pp. 197-301.

[6]Harrison Gough, "Relationship of Socioeconomic Status to Personality Inventory and Achievement Test Scores", Journal of Educational Psychology, Vol. 37, (1947), p. 527.

Curry, in a study to determine whether the differences in scholastic achievement "were significant between groups of sixth-grade children when the groups were of comparable intellectual ability but different in socio-economic status", has shown that when a child has above average intellectual ability he will probably overcome the effects of a deprived home environment. However, he found that as the intellectual ability decreases the effect of deprived economic and social conditions of the home begin to have a more serious effect on scholastic achievement.[1]

Hypothesis III

There will be a positive relationship between pupils' verbal intelligence and their scores on reading comprehension.

Hypothesis IV

There will be a positive relationship between pupils' verbal intelligence and their scores on vocabulary.

Because of the high expected relationships between verbal I.Q. and reading achievement, the hypothesis which follow will, where possible, be tested both before and after partialling out verbal intelligence.

---

[1]Robert L. Curry, "The Effect of Socio-Economic Status on the Scholastic Achievement of Sixth-Grade Children, "British Journal of Educational Psychology, Vol. 32, p. 46.

III. SOCIO-ECONOMIC STATUS AND READING ACHIEVEMENT

Havighurst, when discussing the school as a selecting agency, pointed out:

> The school system attempts to treat children in accordance with their intellectual ability on the ground that children of different kinds of intellectual ability need somewhat different educational experience. At the same time, the system tends to treat children of higher social status as though they had higher intellectual ability. This differential treatment in relation to social class is not intentional on the part of most schools; it results primarily from the cultural differences between social classes.[1]

Many studies have been conducted which show that there is a relationship between socio-economic status and pupil achievement, including reading achievement. Collins and Douglas found that on the basis of the Sims Score Card -- a device containing twenty-three questions with 'yes' and 'no' answers to give an index of both the cultural and economic status of the home - that the superior pupils who are failing in school come from materially inferior homes.[2]

Coleman in a study of approximately 4,800 cases

---

[1]Robert J. Havighurst and Bernice L. Neugarten, Society and Education (third edition, Boston: Allyn and Bacon, 1967), p. 81.

[2]J. H. Collins and H. R. Douglas, "The Socio-Economic Status of the Home as a Factor in Success in the Junior High School, "Elementary School Journal, Vol. 38, (October, 1937), pp. 107 - 113.

divided the total group into four nearly equal groups representing high, normal, and low socio-economic status, and a fourth group whose parents were on 'relief'. Differences between Q_1, the median, and Q_3, were found to favour the higher group for every grade; in chronological age, in intelligence test scores, in reading scores, in geography scores, in history scores, and in problem solving scores.[1] Chauncey 1929[2], and Smith and Penny 1959[3], used correlation ratios between achievement and the Sims Score Card scores, and both studies found positive relationships.

From a study conducted in 1946 Gough found a positive relationship between socio-economic levels, vocabulary, and reading. He maintains that "students from homes of higher socio-economic status are younger, more intelligent, superior in vocabulary, reading, language, and health information, and have fewer personality problems than do pupils from homes of lower socio-economic status."[4]

---

[1] Coleman, loc. cit.

[2] M. R. Chauncey, "The Relation of the Home Factor to Achievement and Intelligence Test Scores, "Journal of Educational Research, Vol. 20, (1929), pp. 88 - 90.

[3] H. A. Smith and L. L. Penny, "Educational Opportunity as a Function of Socio-Economic Status, "School and Society, Vol. 87, (1959), pp. 342 - 344.

[4] Gough, op. cit. p. 529.

In 1963 Hill and Giammatteo studied the relationship of socioeconomic status with vocabulary achievement, reading comprehension, and other variables. They found that the highest correlations between socioeconomic status and reading were on vocabulary .84 and comprehension .90. The authors concluded that socioeconomic status does affect school achievement, including reading, and that children from lower socioeconomic levels do not overcome their cultural deficiency by the end of grade three.[1]

Possibly two of the best indicators of socioeconomic status of the home are mother's education and father's occupational status. The effect of parental education upon reading ability of children has been investigated, and conflicting points of view have resulted. Bennett felt that his data did not point to educational advantages of parents as a significant determinant in the reading progress of children.[2] On the other hand, Monroe and Backus found that parent illiteracy and insufficient

---

[1]Edwin Hill and Michael Giammatteo, "Socio-Economic Status and its Relationship to School Achievement in the Elementary School, "Elementary English, Vol. 40, (February, 1963), p. 265 - 270.

[2]Chester C. Bennett, "An Inquiry into the Genesis of Poor Reading, "Teachers' College Contribution to Education, No. 75 (New York: Columbia University Press, 1938). (Cited in) W. D. Sheldon and L. Carrillo, "Relation of Parents, Home, and Certain Developmental Characteristics to Children's Reading Ability, "Elementary School Journal, Vol. 52, (1952), p. 266.

background were causes of reading failure.[1] Sheldon and Carrillo discovered that thirty-five per cent of the parents of good readers in their sample, contrasted with five per cent of the parents of average readers, and seven per cent of the parents of poor readers, had completed college. They also found that children who were good readers had fathers in the professional and managerial occupations fifty-five per cent of the time, while average and poor readers had fathers in that classification only twenty-five and twenty per cent of the time respectively. In general, they discovered that "good readers come from homes where the fathers are employed in managerial and professional occupations; "the average readers tend to come from homes where fathers are skilled or semi-skilled; and the poor readers from homes where the fathers are in agriculture, fishery, semi-skilled and unskilled occupations.[2]

Kitchen suggests that in Newfoundland the crux of low educational output seems to be the non-literate environments provided by many of the smaller settlements.[3]

---

[1]Monroe and Backus, loc. cit.

[2]W. D. Sheldon and L. Carrillo, "Relation of Parents, Home, and Certain Developmental Characteristics to Children's Reading Ability, "Elementary School Journal, Vol. 52, (January, 1952), pp. 262 - 271.

[3]Kitchen, loc. cit.

Recent studies in the United States of America by such men as Bloom,[1] Burkhead,[2] and Riessman[3] have come up with similar findings, namely that there is a relationship between cultural and economic deprivations, and achievement in school.

Hypothesis V

There will be a positive relationship between father's occupational status and pupils' scores on vocabulary.

Hypothesis VI

There will be a positive relationship between father's occupational status and pupils' scores on reading comprehension.

Hypothesis VII

There will be a positive relationship between mother's education and pupils' scores on vocabulary.

Hypothesis VIII

There will be a positive relationship between mother's education and pupils' scores on reading comprehension.

---

[1] Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education For Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965).

[2] Burkhead, op. cit.

[3] Frank Riessman, The Culturally Deprived Child (New York: Harper and Row, Publishers, 1962).

IV. SIZE OF FAMILY AND READING ACHIEVEMENT

Sheldon and Carrillo found that there was a tendency for fewer of the children to be good readers as the size of the family increased.[1] This would seem relevant to Newfoundland considering the unusually large families to be found here. Kitchen found that "an important underlying educational output ... is family size, particularly the number of children." A comparison of family size for the Atlantic Provinces showed Newfoundland to be "most atypical, with at least .5 more children per family than the other Atlantic Provinces."[2]

Hypothesis IX

There will be an inverse relationship between the number of children under eighteen years of age in the family and pupils' scores on vocabulary.

Hypothesis X

There will be an inverse relationship between the number of children under eighteen years of age in the family and pupils' scores on reading comprehension.

---

[1] Sheldon and Carrillo, loc. cit.

[2] Kitchen, op. cit. p. 12.

V. ABSENTEEISM AND READING ACHIEVEMENT

Douglas and Ross found that in the upper-middle class the performance on school tests was unaffected by either the amount of absenteeism, or the age distribution of it. But in all other classes considerable effects were recorded. Children who were consistently absent, or who were often absent in the last two years of primary school, made low scores at age eleven, and showed a relative deterioration in scores between ages eight and eleven. On the whole, however, it was found that children who were often away in the first two years but made good attendance in subsequent years catch up, except when they come from the lower manual working class or when they went to primary schools that had poor attendance records. They also found that middle-class children were absent mostly in their first two years of school, but lower-class children were absent mostly around ages ten and eleven. Furthermore, children from families of one were found to be absent in their early school years, while those from families of four or more were absent mostly around ages ten and eleven, and on the whole children from larger families were absent most.[1]

---

[1] T. W. B. Douglas and J. M. Ross, "The Effects of Absence on Primary School Performance, "British Journal of Educational Psychology, Vol. 35, (February, 1965), pp. 28 - 40.

Hypothesis XI

There will be an inverse relationship between absenteeism and pupils' scores on vocabulary.

Hypothesis XII

There will be an inverse relationship between absenteeism and pupils' scores on reading comprehension.

VI. TEACHER'S QUALIFICATIONS AND READING ACHIEVEMENT

In a study of a "typical existing situation" with no attempt to control for any factors, Tetley found a tendency for teachers with greater training to be more effective in inducing reading achievement among Grade VI pupils. Also, the length of the training was found to be less significant than the type and recency of training in influencing pupil achievement in reading.[1]

Cheal's data suggest that the qualifications of elementary teachers have a greater effect on the holding power of Canadian schools than do qualifications of secondary teachers.[2] This is to infer that pupils who achieve

---

[1]Dorothy Ferne Tetley, "The Relationship of Certain Teacher Characteristics to Pupil Achievement in Reading," (unpublished Master's thesis, University of Alberta, 1964).

[2]John E. Cheal, Investment in Canadian Youth: An Analysis of Input-Output Differences among Canadian Provincial School Systems (Toronto: McMillan, 1963), p. 66

better in the elementary school because they have better qualified teachers tend to stay in school longer.

Hypothesis XIII

There will be a positive relationship between teacher's qualifications and pupils' scores on vocabulary.

Hypothesis XIV

There will be a positive relationship between teacher's qualifications and pupils' scores on reading comprehension.

VII. SIZE AND AGE OF SCHOOL AND READING ACHIEVEMENT

A survey of reading achievement in Grade VIII in Newfoundland conducted for the Royal Commission on Education and Youth suggested a tendency for the better readers to come from the larger schools. It also found that "regional and central high schools outside St. John's produced higher mean scores on the Reading Comprehension than did all-grade schools of a comparable size."[1] A similar finding resulted from a reading survey of a sample of Grade IV students. The tests used in the survey were

---

[1]Province of Newfoundland and Labrador, loc. cit.

The Dominion Achievement Tests, and were administered by District School Supervisors in all-grade schools, but by the supervising principals in Regional and Central High School systems. The survey was conducted by the Newfoundland Department of Education in 1964 and involved approximately 1,300 students. It found that:

> The average score in the vocabulary test was 27, ranging from 18 in one and two room all-grade schools to 36 in the larger elementary schools. In the comprehension test the average score was 11 varying from 7 in the one and two room all-grade (schools) to 14 in the larger elementary schools. The maximum scores attainable were 60 in the vocabulary test and 28 in the comprehension.[1]

The median grade-level for reading varied from 2.5 in vocabulary and 2.7 in comprehension for pupils in one and two room all-grade schools to 3.7 in both vocabulary and comprehension in the larger elementary schools. In the one and two room all-grade schools only 7 per cent made the grade norm of 4.1 in both tests, contrasted with 34 per cent who reached the norm in vocabulary and 38 per cent in comprehension in the larger elementary schools.[2]

Burkhead found the age of the school building "important and consistently significant" in its relationship to dropouts;" the newer the building the fewer the dropouts."[3] He further states that the "age of the school plant

---

[1] News Letter, Department of Education, St. John's, Volume 16, No. 5 (January- 1965).

[2] Ibid. [3] Burkhead, op. cit. p. 51.

is not unimportant"[4] in determining 12th-grade reading socres in the small-community high schools studies.

In this study the size of the school is indicated by grade six enrolment per classroom because most of the schools in the sample are small, and one would therefore expect to find an improvement in reading achievement as the enrolment in sixth grade per classroom increases, because this would mean that a smaller number of grades are being taught in the same classroom by the same teacher.

Hypothesis XV

There will be a positive relationship between sixth-grade enrolment per classroom and pupils' scores on vocabulary.

Hypothesis XVI

There will be a positive relationship between sixth-grade enrolment per classroom and pupils' paragraph comprehension scores.

Hypothesis XVII

There will be a negative relationship between age of school building and pupils' scores on vocabulary.

---

[4] Ibid. p. 85.

Hypothesis XVIII

There will be a negative relationship between age of school building and pupils' scores on paragraph comprehension.

VIII. SOCIOECONOMIC INPUTS, EDUCATIONAL INPUTS AND READING ACHIEVEMENT

That a relationship does exist between socio-economic inputs and reading achievement, and between educational inputs and reading achievement is unquestionable, but the relative importance of these inputs to reading achievement is. The relationships of socioeconomic status to school achievement has been the subject of much research during the past fifty years, beginning with Neighbours in 1910.[1] Colemen (1940) who worked with a national sample of 4,800 from "all the geographic regions and forty-three of the states" selected on the basis of "socioeconomic scores derived for each pupil by the use of a rating scale"[2] found that higher socio-economic groups made the highest achievement on all group areas tested. Some of his major conclusions were:

---

[1]O. J. Neighbours, "Retardation in the Schools and Some of the Causes," Elementary School Teacher, 11 (1910), 119-135, cited by Hill and Giammatteo, loc.cit.

[2]Coleman, op. cit., p. 61. [3]Ibid., p. 65

> ... There seems to be a definite relationship between socio-economic status and achievement in school subjects. Hence, from groups representing extremes in socio-economic status, one seems justified in looking for differences in achievement in reading...
> ... It appears that a considerable number of pupils coming from low socio-economic groups drop out of school before they reach the ninth grade, since the percentage of low socio-economic scores is less for this grade than for the seventh and eigth grades...
> ...It is impossible to say whether superior achievement is a result of socio-economic status or of intelligence... It is also impossible to say whether intelligence determines socio-economic status, or that socio-economic status determines intelligence. The present investigation does not answer this question, but it does show a relationship among the factors socio-economic status, achievement, and intelligence.[1]

However, Curry in his investigation seems to have answered the question posed by Coleman; he concluded that the scholastic achievement of sixth-grade students does not seem to be affected by socio-economic status. "High - intellectual ability offsets any defiency which may be created by lower social and economic conditions."[2]

As mentioned in Chapter 1, a recent study in the Atlantic Provinces suggests that socioeconomic and demographic variables have a greater effect upon low educational

---

[1] Ibid., p. 65

[2] Curry, op. cit., p. 48.

outputs and retardation, in that area, than do "such educational input variables as the qualifications of teachers."[1] Among Newfoundland census divisions the correlation found between per pupil expenditure on teachers' salaries and Grade VIII pupils retarded one year or more was .23, whereas the correlation between children per family and Grade VIII pupils retarded one year or more was .85. While the correlation between the per cent of teachers with two years training or less and Grade VII pupils retarded one year was .37, that between per cent of population illiterate and Grade VII pupils retarded one year or more, 1965, was .89.[2] There are many other correlations that could be quoted from that survey to show similar relationships of socioeconomic versus educational inputs with pupil achievement.

In an extensive study conducted on input and output in large city high schools Burkhead concluded that the most important finding the study was that "variations in educational outcomes in large-city high schools, measured in terms of test scores, are almost wholly conditioned by the socioeconomic environment of the neighbourhood."[3]

---

[1] Kitchen, op. cit., p. 1.

[2] Ibid., p. 30.

[3] Burkhead, op. cit., p. 88

The input-output model[1] was also applied to small-community high schools, and although other variables became more important than in large-cities as compared with median family income - the socioeconomic variable used in both types of schools - in the final analysis "community income continues to be the most important influence on educational outcomes."[2]

In this study four socioeconomic inputs instead of one are being used; they are, father's occupation, mother's education, size of family, and absenteeism. The educational outputs being considered are teacher's qualifications, size of school (classroom enrolment), and age of school. Intelligence is being considered separately. Consequently, the major hypotheses of this study looks at socioeconomic versus educational inputs as related to reading achievement.

Hypothesis XIX

Socioeconomic variables will be more closely related to vocabulary scores than will educational variables.

---

[1] It is this model that will be used in this study to find the comparative relationships of socioeconomic, and other variables to reading achievement.

[2] Burkhead, Ibid. p. 85.

Hypothesis XX

Socioeconomic variables will be more closely related to paragraph comprehension scores than will educational variables.

IX. SUMMARY

Section 1 of this chapter dealt with sex and reading achievement, and presented research findings to indicate that girls do achieve better than boys in reading. Thus it is necessary to test each hypothesis three times: for boys, for girls, and for boys and girls together.

Section II dealt with research findings to support the relationship existing between intelligence and reading achievement. The studies mentioned have found a significant positive relationship between intelligence and reading achievement.

Section III dealt with the socioeconomic variables father's occupation and mother's education. The findings of the studies presented show a significant and positive correlated relationship between socioeconomic levels and reading achievement. Low occupational status and low parental education are associati with low achievement, whereas high occupational status and high parental education are associated with higher reading achievement.

Section IV identified another socioeconomic variable, the size of family, as being related to pupil's reading achievement. In general fewer of the children tend to be good readers as the size of the family increases.

In Section V a study was reported to show how another socioeconomic variable, absenteeism, affects the achievement of pupils, but that it affects pupils from the lower classes considerably more that it does those from the upper and upper-middle classes.

Research findings were reported in Section VI which show that the educational input variable, teacher's qualifications, does affect pupil's reading achievement, but that the length of training was less significant than the type and recency of training.

In Section VII factors relating to the school building were looked at in the light of research findings. Generally it was concluded that the best achievement is associated with the larger and the newer schools.

Literature to support the main hypotheses was presented in Section VIII. These studies revealed that reading achievement is determined more by socioeconomic input variables than by educational input variables.

CHAPTER III

EXPERIMENTAL DESIGN

This chapter will discuss the collection of data, the tests and other instruments employed in the investigation, and the analyses of the data.

I. AREA SELECTED FOR THE STUDY

Research activities for this study and two companion studies were carried out at the same time and on the same pupil, parent and teacher samples. One of the researchers[1], who had considerable aquaintance with and teaching experience in the electoral district of Trinity North, insisted that the area was well suited to such an investigation. Subsequent discussion and investigation resulted in the selection of the electoral districts of Trinity North and Trinity South (hereafter called Trinity Bay) as the area to be studied.

The area was known to be primarily a rural fishing area, and therefore typical of much of Newfoundland and Labrador (hereafter called Newfoundland). Department of Education records revealed that the Grade Six pupil popula-

---

[1]Stuart Ralph, Socioeconomic Versus Educational

tion in the area was approximately 800. These pupils were in over seventy classrooms in more than sixty communities, and had teachers with qualifications ranging from Emergency Supply to a Grade Three Teaching Certificate.[1]

II. REASONS FOR USING GRADE SIX

The choice of grade six represents largely an attempt to maximize the effects of both the socioeconomic and the educational variables. Grade six, being perhaps the last pre-dropout grade, draws pupils more so than subsequent grades from the whole socioeconomic range of the community. The attendance of pupils beyond grade six at central and regional schools decreases the range of educational input. On the other hand, by grade six, more than any earlier grade, such educational variables as age and size of school and teachers' qualifications have had the opportunity to make their maximum effects felt, especially on reading achievement. After grade six much less formal attention is given by the school to reading. Finally, pupils much younger than those in grade six would have been much more difficult to test and to transport to central testing locations.

Inputs as Related to Grade Six Language Achievement in Rural Newfoundland (Master's thesis in process, Memorial University of Newfoundland, St. John's, 1969).

[1]Emergency Supply refers to teachers with neither professional training nor post-secondary education; Grade Three Teaching Certificate is the equivalent of three years post-secondary education (beyond junior matriculation).

III. COLLECTING THE DATA

In January, 1968, permission was received from the Denominational Superintendents at the Department of Education, Newfoundland, to contact the School Boards in the area to be studied. The correspondence comprises Appendixes A to E

The Department's records provided the names and addresses of the School Board chairmen in Trinity Bay. Subsequently a letter (Appendix F) was sent to each chairman explaining the nature and purpose of the study, and inviting replies from those who needed further clarification of, or objected to the study being carried out in the schools under their jurisdiction. No objections or requests for clarification were received.

In early April, 1968, a tentative schedule based on Department of Education information on Grade Six pupil enrolment and the schools in Trinity Bay, was made for the testing program. On April 26, a visit was made to all the schools in the area from Sibley's Cove to George's Brook to discuss the testing program with teachers and principals, to make arrangements for testing centres and the transportation of pupils to them, and to finalize the testing schedule. The schools from Trinity to Elliston were visited on May 13, to make similar arrangements. Full cooperation was received from all. Appendix L indicates the testing centres, the

testing schedule, and the arrangements for transportation.

During May, 1968, tests were administered to the pupils as shown in Appendix L, and questionnaires completed by teachers and parents. The tests were hand scored and the results, along with the information from the teacher and parent questionnaires entered on coding forms. The coded information was processed at Memorial University's computing centre. A detailed description of the procedure followed is presented below.

IV. SAMPLES

Teacher Sample

The records of the Department of Education, Newfoundland, showed that as of January 31, 1968, there were seventy-eight classrooms in seventy-seven schools in Trinity Bay in which grade six was being taught. Hence, there were seventy-eight teachers teaching grade six pupils in the sixty-four communities to be used in the study. The Department's records further revealed that qualifications of the teacher sample would range from emergency supply to grade three certification. This was found to be correct when the data was collected in May.

Pupil Sample

In the seventy-eight classrooms to have been used in the study, the Department's records had shown that as of

January 31, 1968, there were eight hundred and five pupils grade six. However, one school with an enrolment of four teen pupils in grade six was not in session when the tests were administered in its area. There were seven hundred ninety-one pupils enrolled in grade six in the seventy-seven classrooms in which the tests and questionnaires were administered. However, since some pupils were absent at the time of administration only seven hundred forty-six, as shown in Appendix L. wrote the reading test.

Parent Sample

For the purposes of this study the parents or guardians of each of the pupils present when the tests were written were asked to complete a questionnaire. The questionnaire was taken home by each pupil for completion by the parents. The completed questionnaires were returned from 99 per cent of the parents involved.

V. INSTRUMENTS

Four instruments were used to produce the data of this study: a teacher questionnaire, a parent questionnaire, avverbal intelligence test and a reading test. Each will now be discussed in detail.

Teacher Questionnaire

The teacher questionnaire was designed to obtain information on the qualifications of each teacher, the

enrolment in each classroom, the absenteeism of each grade six pupil between September 6, 1967 and April 30, 1968, and the age of the school building. Data on enrolment and absenteeism were taken from the class register by the teacher. Although the teacher gave his teaching grade and the age of the school building, in many cases, where convenient, this information was checked with the principal and was found to be accurate. A copy of the questionnaire is in Appendix J.

Parent Questionnaire

Each pupil in the study was given a copy of the parent questionnaire shown in Appendix I to take home to his parents or guardians. The information requested was the mother's education, father's occupation, and the number of children in the family eighteen years of age and under who were living at home. The information received on these questionnaires was in many instances verified by the pupil's teachers and principals.

Verbal Intelligence Test

The Lorge-Thorndike Intelligence Test, Form 3AV was used in the study. The verbal I.Q. obtained from this test is a deviation I.Q. designed to have the same mean and standard deviation at each grade level. The I.Q. always has the same meaning in terms of standing within the norming

group. For the Lorge-Thorndike Intelligence Test the mean is set at 100 and the standard deviation at 16. One reviewer recommends the test:

> This 1957 version of the Lorge-Thorndike Intelligence Tests is among the best group test available from the point of view of psychological constructs upon which it is based and that of statistical standardization.[1]

Another reviewer states:

> This test is admirable for the clarity with which its objective is stated and for the restraint exercised in the claims for what it can do...
>
> The Lorge-Thorndike Tests should be accorded a place among the best of our group intelligence tests. They are well designed, easily administered, and scored, and what is especially noteworthy, the uses recommended for them are reasonable and defensible.[2]

The reliability of the test has, in other studies, been measured in four ways. The alternate form reliability of the Lorge-Thorndike Intelligence Tests gave a correlation of .896 between Form A and Form B of the tests at the level used in this study. "In the testing carried out to obtain estimates of alternate forms reliability, the order of presentation of the two forms was rotated..."[3]

---

[1] Oskar K. Buros (ed.), The Fifth Mental Measurements Yearbook (New Jersey: The Grypton Press, 1960), p. 479.

[2] Ibid. p. 481.

[3] Irving Lorge and Robert L. Thorndike, The Lorge-Thorndike Intelligence Tests Technical Manual (Boston: Houghton Mifflin Company, 1962), p. 9.

The split-half reliability coefficient of the test has been found to be .94, and the stability coefficient .79. The reliability coefficient arrived at for Form 3AV as a result of a standard error of measurement in points of I.Q. at selected raw score levels for 2,659 cases had been found to be .92.[1]

The validity of the Lorge-Thorndike Intelligence Tests is considered in the test manual under two main headings - rational and statistical. To determine the rational validity of the tests each item had been examined to see if it required pupils to make responses which one would call "intelligent". Since the items in these tests "were selected so that, for the most part, they deal with relationships", most items require a pupil to find the principle and then apply it. In other words, the tests have been designed to measure reasoning ability.[2]

The statistical validity of the Lorge-Thorndike Intelligence Tests has been well established as a result of studies measuring their relationship with other criteria such as the Iowa Test of Basic Skills, the Stanford Intermediate, the Iowa Every Pupil Grade Equivalent, the California Achievement Tests, the Iowa Tests of Educational

---

[1] Ibid.

[2] Irving Lorge and Robert L. Thorndike, The Lorge-Thorndike Intelligence Tests Examiner's Manual (Boston: Houghton Mifflin Company, 1957), p. 14.

Development, and also with other intelligence tests such as the California Mental Maturity, the Kuhlmann-Anderson, and the Otis. For example, the correlation between the Lorge-Thorndike and the Stanford Achievement Grade Six reading was found to be .83, and between the Lorge-Thorndike I.Q. and the Kuhlmann-Anderson I.Q. was .81.[1]

Reading Test

The Nelson Reading Test 1962 Revised Edition, Form A, was used as a measure of reading achievement, and the raw scores on the vocabulary subtest, the Paragraph Comprehension subtest, and the Total Reading scores were used in the study as the criteria or dependent variables. The Vocabulary subtest is composed of 100 items, and was given 10 minutes of working time as directed in the examiner's manual accompanying the test. The paragraph Comprehension subtest is made up of twenty-six paragraphs, and three questions are asked on each paragraph. These questions involve the main thought of the paragraph, the details of the paragraph, and a prediction of the outcome based on what the paragraph contains. The working time for the Paragraph Comprehension subtest was 20 minutes. Appendix G contains a copy of the reading test used.

---

[1] op. cit. pp. 15 - 22.

The examiner's manual reports that the alternate forms method was used to derive reliabllity coefficients for The Nelson Reading Test. At the sixth-grade level these coefficients were found to be .87 for Vocabulary, .85 for Paragraph Comprehension, and .93 for Total Reading.[1]

To obtain evidence of the congruent validity of The Nelson Reading Test it was administered in conjunction with the Iowa Tests of Basic Skills (ITBS), and the Pearson product moment correlations were computed between the scores on The Nelson Reading Test (TNRT) vocabulary scores and the ITBS vocabulary scores (.73 for grade six), and also between TNRT paragraph scores and ITBS reading subtest scores (.76 for grade six). Corresponding correlations between TNRT and The Henmon-Nelson were .66 and .60.[2]

H. Alan Robinson contends that the revised test appears to be effective as a measure of reading achievement. He further states that the standardization procedure was meticulous and comprehensive. The test was not used in this study as a diagnostic instrument but rather as a gross measure of reading achievement, and for this purpose

---

[1] M. J. Nelson, The Nelson Reading Test Examiner's Manual (Boston: Houghton Mifflin Company, 1962), p. 20.

[2] Ibid. pp. 20 - 21.

Robinson allows it is adequate.[1]

It should be noted, however, that in the present study no independent analyses were made of the reliability or the validity of either the intelligence test or the reading test.

VI. ADMINISTRATION AND SCORING OF TESTS

The tests were administered with batteries of tests in arithmetic and language in cooperation with two co-workers who were conducting similar studies using the same pupils as subjects, but using arithmetic and language achievement as measures of output. Detailed instructions of administration as given in the examiners' manuals were used to insure uniformity of procedure. The test schedule was arranged so that no more than a morning or an afternoon was used in one day for testing the same group of pupils, and that all tests were given in the same sequence to all pupils. Both tests used in this study were given in the afternoon testing session from 2 p.m. to 4 p.m., as shown in the schedule in Appendix K.

The testing was carried out from May 1, 1968 to

---

[1] Oscar K. Buros (ed.), The Sixth Mental Measurement Yearbook (New Jersey: The Grypton Press, 1965), p. 1082.

May 21, 1968. Thirty-three test centres were used, and pupils were transported to these centres where necessary. Appendix L shows the testing centres and the transportation involved. More than seventy-five per cent of the pupils tested were in groups of twenty to twenty-five, and in no instance did a group include less than eight or more than fifty-seven pupils. A copy of the parent questionnaire was left with each pupil at the end of the first testing session. This was to be returned at the second session. These questionnaires yielded information on mother's education and number of children in the family for 736 of the 746 pupils who wrote the reading test, and on father's occupation for 718 pupils. Also, a copy of the teacher questionnaire was given to each teacher during the first session for completion and return. In this way data on teacher qualifications, class enrolment, age of school building and absenteeism were obtained for all 746 pupils.

To convert the scores on the Lorge-Thorndike Intelligence Test to so-called 'deviation I.Q.' obtained from a table furnished by the authors was used. These I.Q.'s have a norm of 100 and a standard deviation of 16. I.B.M. 805 answer sheets were used with this test; a right scoring mask was used for hand-scoring.

The answer sheets used with The Nelson Reading Test were self-scoring, and the raw scores were used as dependent

variables.

The data from the teacher and parent questionnaires were tabulated on the basis of a previously determined system of values. An example of the tabulation of these data is shown in Table II.

These data were punched on I.B.M. cards, and the analyses discussed below carried out using the I.B.M. 1620 computer at Memorial University of Newfoundland.

VII. ORGANIZATION OF THE ANALYSES

Three types of analyses will be reported, namely a descriptive analysis, F-ratios and t-tests, and the multiple correlation analysis.

The Descriptive Analysis

An overview of the nature of the pupil, parent and teacher samples will be presented in Chapter IV. No attempt will be made in this analysis to differentiate between the effects of the different predictors, such as sex, intelligence, mother's education, father's occupation, absenteeism, size of family, teacher's qualifications, size of school, and age of school on reading achievement as measured by standardized vocabulary and comprehension subtests. This section is intended primarily to give the reader an overall view of the performance of the pupils, and the composition of the teacher and parent samples.

TABLE II

TABULATION OF SAMPLE DATA FROM TESTS AND QUESTIONNAIRES

Pupil's Computer Number	Mother's Education	Father's Occupation	Days Absent	IQ.	Vocab-ulary Score	Para-graph Compre-hension Score	Number in Class	Age of School	Size of Family	Teacher's Qualific-ations
001	7	408	20	91	41	28	14	11	3	4
028	6	432	40	94	22	29	34	38	4	6
746	12	532	10	121	49	38	28	4	2	7

Note:- The number 20 under days absent actually means 2 days absent because days absent as multiplied by 10 to clear decimals. Also 408 under father's occupation means 40.8 because it has been multiplied by 10 to clear decimals.

F-Ratios and t-Tests

These tests of significance will be carried out in Chapter V to find out if there is any statistically significant difference between the performance of boys and girls on standardized tests, and also to determine whether the two sub-groups differ significantly with respect to the information gathered from the parent and teacher questionnaires. The tests of significance used are shown in Appendix N.

Multiple Correlation Analysis

The first step in this analysis was to prepare intercorrelation matrices on output and input variables for both sexes, for boys, and for girls. The results of this part of the analysis were used to test the hypotheses concerning the relationships between the educational output variables and the various input variables. These intercorrelations are reported in Appendixes P, Q and R.

Using the product-moment correlations mentioned above multiple correlation coeffecients were built beginning with one criterion and one variable up to one criterion and eight variables. This was done for both criteria for boys, for girls, and for both sexes. The purpose was to find the relative contribution of each predictor to the prediction of each criterion. The eight independent variables were introduced in the same order for

each of the two dependent variables for boys, for girls and for boys and girls together. The order of introduction was, except for teacher's qualifications and verbal intelligence, in the descending value of the correlation of each independent variable with the dependent variable. The exceptions given were always introduced last and in that order. This was done to find the effect of the socioeconomic variables on educational output, before the in-school variables and intelligence were added. As each independent variable was added the coefficient of multiple correlation was computed to show the importance of the addition of each successive variable. The coefficients of relationship set forth in Tables XXV to XXX are beta coefficients, which according to one investigator is "the net regression coefficients standardized in terms of standard deviations."[1] Ezekiel states that the "term net is added (to regression coefficients) to indicate that they show the relation of X_1, to X_2 and X_3 respectively, excluding the associated influences of the other independent variables."[2] As a result

---

[1]Burkhead, op. cit., p. 49

[2]Mordecai Ezekiel and Karl A. Fox. Methods of Correlation and Regression Analysis (3rd. ed., New York: John Wiley and Sons, p. 153. See also pp. 196-197.

the beta puts the net regression coefficients on a comparable basis, since an increase of one standard deviation in the independent variable results in an increase in the dependent variable equal to the product of its standard deviation and the beta coefficients.[1]

---

[1] Burkhead, op. cit. p. 49.
For example, if the standard deviation of the independent variable is 4.0 and of the dependent variable is 6.0 and the beta coefficient is .4, then a change of ±4.0 in the independent variable is associated with a change of ± 2.4 in the dependent variable.

CHAPTER IV

DESCRIPTIVE ANALYSIS

This chapter reports the distribution of pupils classified by each of several variables used in the study - by sex, intelligence, father's occupation, mother's education, size of family, absenteeism, teacher's qualifications, classroom enrolment, size of school, age of school, reading vocabulary and reading comprehension. The testing of the hypotheses is deferred until the next chapter.

I. SEX

As shown in Table III, 746 pupils, including 393 boys and 353 girls, in 77 classes wrote the reading tests. However, complete information on all variables was obtained for only 684 pupils, of whom 361 were boys and 323 were girls. Each section of the present chapter reports data on 746 pupils, except mother's education and size of family for which data were received for 736 pupils, and father's occupation with data for 718 pupils. In Chapter V only those 684 pupils for whom complete data were available could be analyzed using available computer programs. There were 791 grade-six pupils in the area at the time of the study.

TABLE III

PUPILS CLASSIFIED BY SEX

	Number Writing Reading Test	Number for Whom Complete Information Was Obtained
Boys	393	361
Girls	353	323
Total	746	684

II. INTELLIGENCE

Two interesting findings emerge from the data presented in Table IV:

(1) Both the mean and the median I.Q. of the boys were six points below those of the girls. Moreover, the distribution of I.Q. for girls corresponded more to the normal distribution than did the distribution for boys.

(2) The mean I.Q. of the total sample was five points below (median six points below) that of the U.S. pupils comprising the norming population. Scores from the present study compared favourably with those of American pupils in below average socio-economic communities. For means the boys were eight points below total norms and girls

two points; for medians the differences were nine and three, respectively.[1]

TABLE IV

PUPILS CLASSIFIED BY INTELLIGENCE

Class Interval (I.Q.'s	Boys %	Girls %	Both Sexes %	Normal Distribution %
130 and Over	2.3	3.4	2.7	3.0
120 - 129	3.6	5.1	4.2	7.6
110 - 119	8.6	11.1	9.5	16.0
100 - 109	13.7	21.8	17.6	23.4
90 - 99	27.0	30.5	28.7	23.4
80 - 89	27.0	19.3	23.5	16.0
70 - 79	13.7	7.1	10.6	7.6
Below 69	4.5	1.7	3.2	3.0
Median	91	97	94	100
Mean	92	98	95	100
SD	15	15	15	16

[1]The norming population consisted of 136,000 children in 22 American States, from a random sample of 44 communities stratified according to socio-economic criteria. See Irving Lorge and Robert L. Thorndike, The Lorge-Thorndike Intelligence Tests Technical Manual, (1954), pp. 5 and 24.

III. FATHER'S OCCUPATION

The Blishen Scale, an occupational class scale, with occupations ranked and grouped according to combined standard scores for income and years of schooling, by sex, was used in classifying the father's occupations. Table V classifies the 718 pupils on which data were obtained according to the Blishen Scale categories of fathers' occupations. A copy of the scale based on the Census of Canada 1951 is included in Appendix M.

Many of the twenty-eight fathers not included in Table V were either retired, incapacitated, or deceased. On the basis of the figures for Newfoundland found in the D.B.S. Census of Canada, 1961, a comparison was made between the percentage in each of the seven classes, both for the sample and for Newfoundland as a whole. It should be noted that the figures for Newfoundaand were adapted to fit the Blishen Scale classifications, and they are fairly accurate. The percentage in the first five classes for the sample are considerably below those of the whole province, and this is especially significant in class one, the professional. As expected in any rural area in Newfoundland the majority of the occupations are found in classes six and seven; such occupations as fishing and labour are predominant.

TABLE V

PUPILS' FATHERS' OCCUPATIONS CLASSIFICATION PER BLISHEN CATEGORIES AS COMPARED WITH CLASSIFICATION FOR NEWFOUNDLAND PER 1961 CENSUS

Blishen Scale Occupational Categories	Sample Number	Sample % (a)	1961 Census* %of all Nfld. (b)	Difference (a) - (b)
Class 1	3	.4	8.5	-8.1
Class 2	39	5.4	7.5	-2.1
Class 3	7	1.0	6.8	-5.8
Class 4	17	2.4	8.5	-6.1
Class 5	106	14.7	18.2	-3.5
Class 6	225	31.4	26.7	4.7
Class 7	321	44.7	20.4	24.3
Not Stated			3.4	
	718	100.0	100.0	

*Adapted from D.B.S. Census of Canada, 1961.

It is in the classification of fishermen that considerable difficulties arise when using the Blishen Scale. There is a vast difference between the inshore fishermen with a small boat and little fishing equipment, and the long-liner or dragger fisherman. The former barely earns enough money to survive, whereas the latter, for the most part, earns as much money as those in the much higher categories on the Scale. The Blishen Scale, unfortunately, does not distinguish between the different types of fishermen.

IV. MOTHER'S EDUCATION

In Table VI pupils are classified according to the reported education of their mothers, using an 18-point scale. The mode for mothers' education was grade eight, and the mean for the 736 mothers who reported their education level was 7.28. There is a mean grade difference of .05 between this group and the 684 used in the statistical analysis. It is not a significant difference. The median of the 736 mothers' education was 7.52. About 20 per cent of the pupils had mothers who were classified as functionally illiterate, that is had no more than grade five education.

TABLE VI

PUPILS CLASSIFIED ACCORDING TO MOTHER'S EDUCATION

Mother's Formal Education	Points	Number of Pupils	%
No formal education	0	5	.67
Grade I	1	5	.67
Grade II	2	16	2.14
Grade III	3	31	4.16
Grade Iv	4	71	9.52
Grade V	5	69	9.25
Grade VI	6	88	11.80
Grade VII	7	70	9.38
Grade VIII	8	142	19.03
Grade IX	9	93	12.47
Grade X, or Grade IX and one year trade school	10	56	7.51
Grade XI, or Grade IX and two years trade school; or Grade X and one year trade school	11	49	6.57
Grade XI and one year of vocational or higher education	12	35	4.69
Grade XI and two years of vocational or higher education	13	3	.40
Grade XI and three years of vocational or higher education	14	3	.40
Grade XI and four years of vocational or higher education	15	2	.27
Grade XI and five years of vocational or higher education	16	0	.00
Grade XI and six years of vocational or higher education	17	0	.00
Grade XI and seven years of vocational or higher education	18	1	.13
Unknown		10	1.34
Total		746	100.00

TABLE VII

PUPILS CLASSIFIED ACCORDING TO
NUMBER OF CHILDREN
IN FAMILY

Children Per Family Under 18 Years Old	Number of Pupils	%
1	54	7.24
2	84	11.26
3	142	19.03
4	106	14.21
5	120	16.09
6	80	10.72
7	58	7.77
8	41	5.50
9	27	3.62
10	11	1.48
11	11	1.48
12	1	.13
13	1	.13
NA	10	1.34
Total	746	100.00

V. SIZE OF FAMILY

In Table VII the pupils in the sample are classified according to the number of children in the family. The information on family size was gathered from the parent questionnaire. The median family size - this includes only those 18 years of age and under -- for the 746 pupils in this study was 3.9, the mean was 4.6 and the mode 3.[1]

VI. DAYS ABSENT

A comparison of the attendance of the pupil population for the one hundred fifty-two days school had been open for the school year 1967-68 up to and including April 30, with the attendance for all pupils in Newfoundland for the school years 1965-66 and 1966-67 showed a difference of approximately two percentage points in favor of pupils in the study. The percentage attendance for all Newfoundland for 1965-66 was 92.3[2], and for 1966-67 was 92.6[3], whereas

---

[1]The average Newfoundland family in 1961, according to the Dominion Census of that year had 2.7 children. This included families with no children, as well as with no children attending school. It also included children of all ages, whereas this study included only children who were 18 years of age or under. See Kitchen, op. cit. p. 12.

[2]Newfoundland Department of Education, Statistical Supplement to the Annual Report of the Department of Education for the School Year ended June 30th, 1966, p. 9.

[3]Newfoundland Department of Education, Statistical

the percentage attendance for the pupil sample was 94.4.

Table VIII indicates that 98 per cent of the pupils were absent fewer than forty days. Some 60 per cent of the pupils had fewer than 6 days absent, and 43 per cent had fewer than 3 days absent. The median for days absent was approximately five days. It is interesting to note that nearly 20 per cent of the pupils in the sample lost two days or less.

VII. TEACHER'S QUALIFICATIONS

Teacher's qualifications were ranked on an eight point scale as given in Table IX. A summary of the information on teachers by qualifications and classification of pupils according to teacher's qualifications is presented in Table IX. It should be noted from the table that nearly one-half, 48 per cent, of the teachers involved had less than one year of professional training, and that 10 per cent had no training at all. Only 7 per cent of the teachers had three years of professional training, and none of the teachers involved had a degree or grade four.

Supplement to the Annual Report of the Department of Education for the School Year ended June 30th, 1967, p. 9.

TABLE VIII

CUMULATIVE FREQUENCIES AND CUMULATIVE PERCENTAGE FREQUENCIES FOR DAYS ABSENT

Class Interval (Days Absent)	Frequency	Cumulative Frequency	Cumulative Percentage Frequency
Over 40	12	737	100.0
36 - 39	7	725	98.4
33 - 35	2	718	97.4
30 - 32	3	716	97.2
27 - 29	6	713	96.7
24 - 26	12	707	95.9
21 - 23	17	695	94.3
18 - 20	25	678	91.9
15 - 17	45	653	88.6
12 - 14	62	608	82.5
9 - 11	102	546	74.1
6 - 8	127	444	60.2
3 - 5	171	317	43.0
0 - 2	146	146	19.8
Unknown	9		
Total	746		
Total less unknown	737		

TABLE IX

PUPILS CLASSIFIED ACCORDING TO TEACHER'S QUALIFICATIONS

Grade pr Licence	Training	Point Value	Number of Teachers	% of Total	Provincial per cent	Difference + or -	No. of Pupils	% of Pupils
D	High School but no professional training	1	8	10.4)			47	6.3
P or C	One six-week Summer School of professional training	2	22	28.6) 41.6	25.2	+16.4	135	18.1
B	Two six-week Summer Schools of professional training	3	2	2.6)			23	3.1
A	A University year of professional training less one course	4	5	6.5	3.2	+ 3.3	63	8.4
1	A University Year of professional training	5	25	32.5	36.8	- 4.3	262	35.1
2	Two complete years of professional training or the equivalent	6	10	12.9	12.4	+ 0.5	170	22.8
3	Three complete years of professional training or the equivalent	7	5	6.5	5.8	+ 0.7	46	6.2
4	Four complete years of professional training or the equivalent	8	0	0.0	16.6	-16.6	0	0.0
Total			77	100.0	100.0	0.0	746	100.0

Note:- Although the Newfoundland Department of Education issues Teaching Grade Certificates up to an including Grade Seven, it was not considered necessary to go beyond Grade Four here.

The sample consists of about an equal number of male and female teachers.

A comparison of teachers involved in the study with the teacher population of the province on a percentage basis per qualifications is also reported in Table IX. However, since the percentages for the province include high school teachers, and since the best qualified teachers tend to gravitate toward the high school, differences would be expected in favor of the provincial percentages. Nevertheless, the magnitude of the percentage differences found here are especially noticeable.

Although 81 per cent of the teachers had a Grade 1 qualification or less, they taught only 71 per cent of the pupils as indicated in Table IX. On the other hand the 19 per cent of the teachers who had grade 2 or Grade 3 qualifications taught 29 per cent of the pupils. These facts suggest that the better qualified teachers taught the larger Grade VI classes in the larger schools.

VIII. CLASSROOM ENROLMENT

As shown in Table X, 407 pupils, 55 per cent of the sample,were in classrooms of 15 Grade Six pupils or less. Sixty-three of the seventy-six schools had such classrooms. The other 339 pupils, or 45 per cent, were in classrooms with a sixth-grade enrolment of 16 pupils or more. It

TABLE X

PUPILS CLASSIFIED ACCORDING TO CLASSROOM ENROLMENT

Size of Class	Number of Schools	% of Total	Number of Pupils	% of Total
1 - 5	30	39.5	89	11.9
6 - 10	22	28.9	172	23.1
11 - 15	11	14.5	146	19.6
16 - 20	2	2.6	37	4.9
21 - 25	5	6.6	155	20.8
26+	6	7.9	147	19.7
Total	76	100.0	746	100.0

should also be noted that 332, or 41 per cent of all the pupils in the sample were in classrooms with Grade VI enrolment of 21 or more. This might be explained by the fact that when there are more than twenty pupils in one grade they are in a separate classroom with a grade teacher. These enrolments would, of course, be found in the larger elementary and all-grade schools. Furthermore, although 40 per cent of the schools had enrolments in Grade VI of from one to five pupils, only 12 per cent of the pupils in the sample were found in these schools.

IX. AGE OF SCHOOL

It was found, as shown in Table XI, that over half of the pupils in the study were in buildings less than fifteen years old. This, combined with the knowledge gleaned from Table X, indicates that many schools with less than sixteen pupils enrolled in Grade Six were built since 1953. The older schools are for the most part one or two room schools, whereas the newer ones, especially those less than five years old, are mostly larger schools with one grade per classroom. However, it must also be pointed out that where centralization of school populations are being practiced, but the new central elementarysschools had not yet been constructed, many of the older one room feeder schools enroll one grade.

TABLE XI

PUPILS CLASSIFIED ACCORDING
TO AGE OF SCHOOL

Age of School	Number of Schools	% of Total	Number of Pupils	% of Total
1 - 5	12	15.8	170	22.8
6 - 10	10	13.6	125	16.8
11 - 15	16	21.0	169	22.7
16 - 20	13	17.1	122	16.3
21 - 25	14	18.4	97	13.0
26 - 30	4	5.2	31	4.1
31 - 35	3	4.0	22	2.9
36 - 40	1	1.2	2	.3
41 - 45	0	0.0	0	0.0
46 - 50	1	1.2	3	0.4
50+	1	1.2	2	0.4
Unknown	2	2.5	2	0.3
Total	76	100.0	746	100.0

X. READING VOCABULARY

The vocabulary scores of the grade six pupils tested in the present study were, like their I.Q. scores, appreciably below American national norms.[1] The median was 40 in the present study whereas for grade six pupils the norm was 44. Since the pupils were tested in May, the ninth month of grade six, they should have been achieving at a median grade equivalent of 6.9 whereas their actual median of 40 gives them a grade equivalent of 6.2, or more than a half year behind the median American child of the comparable norming population. Table XII reveals the distribution of scores.

XI. READING COMPREHENSION

The paragraph comprehension scores of pupils in the present study were also below the norms. The median of 31 is appreciably below the test norm median of 36. This median is that of a pupil of grade equivalent 5.7 instead of the expected 6.9. With the paragraph comprehension 1.2 grades below American norms compared to .7 grades below for vocabulary, the finding is that the pupils tested were even worse on

---

[1] M. J. Nelson, The Nelson Reading Test Examiner's Manual (Boston: Houghton Mifflin Company, 1962), pp. 13 and 17.

TABLE XII

CUMULATIVE FREQUENCIES AND CUMULATIVE PERCENTAGE FREQUENCIES FOR VOCABULARY SCORES

Class Interval (Vocabulary Scores)	Frequency	Cumulative Frequency	Cumulative Percentage Frequency
90 - 100	0	746	100.0
81 - 90	1	746	100.0
71 - 80	4	745	99.9
61 - 70	25	741	99.3
51 - 60	48	716	96.0
41 - 50	185	668	89.5
31 - 40	279	483	64.7
21 - 30	158	204	27.3
11 - 20	40	46	6.2
0 - 10	6	6	.8
Total	746		

comprehension than they were on vocabulary. Table XIII indicates the distribution of scores.

X. SUMMARY

The purpose of this analysis was, as previously stated—, to show the distribution of pupils when classified by each of the variables used in the study. It was found that the number of boys and girls in the study was approximately the same. The I.Q. of the pupils in the sample was found to be appreciably below average, and actually placed the pupils on a par with the low average and below average socioeconomic groups in the U.S. norming population.

The occupational status of ninety per cent of the fathers was in the lower three classifications of the Blishen Scale. The median for mother's education was 7.5 years of formal education. The median size of family, defined as children per family 18 years of age and living at home, was 3.9. The other socioeconomic variable, days absent, indicated an absentee rate of 5.6 per cent, some two percentage points better than the average for the whole province during the previous two years.

The educational input variable, teacher's qualifications, ranged between emergency supply and grade three with the median being B Licence. The classroom enrolment

TABLE XIII

CUMULATIVE FREQUENCIES AND CUMULATIVE PERCENTAGE FREQUENCIES FOR PARAGRAPH COMPREHENSION SCORES

Class Interval (P.C. Scores)	Frequency	Cumulative Frequency	Cumulative Percentage Frequency
69 - 78	1	746	100.0
59 - 68	8	745	99.9
49 - 58	36	737	98.8
39 - 48	86	701	93.9
29 - 38	307	615	82.4
19 - 28	242	308	41.3
9 - 18	63	66	8.8
0 - 9	3	3	.4
Total	746		

input variable showed that most of the pupils in the study were in classes with fewer than 15 grade six pupils in the classroom. This suggests that the majority of pupils studied were in multigrade classrooms. The other educational input variable showed that the majority of the pupils in the sample were in schools which were less than 15 years old.

The pupils' median performance on the vocabulary test was 0.7 grades below national U.S. norms on vocabulary and 1.2 grades below on comprehension.

CHAPTER V

STATISTICAL ANALYSIS

This chapter tests the hypotheses of the study as established in Chapter II. The first nine sections deal with the hypotheses specifying relationships between the various input variables and reading achievement. The tenth section tests the major hypothesis, namely that socioeconomic variables are related more closely to reading achievement than are the educational input variables. The .05 level of significance will be used throughout the study to test the hypotheses.

I. SEX

Hypotheses I and II predicted that girls would score higher than boys on vocabulary and on paragraph comprehension, respectively. Using a one-tailed t-test for independent samples, after F-tests had revealed homogeneity of variance, and after ascertaining from scanning the frequency distributions of Tables XII and XIII that the population distributions were approximately normal, it was found that the mean scores of girls on both vocabulary and paragraph comprehension were indeed greater than those of

TABLE XIV

A COMPARISON OF MEANS AND OF STANDARD DEVIATIONS OF CRITERIA AND PREDICTORS FOR 361 BOYS AND 323 GIRLS

	X			S.D.		
Variables	B	G	t	B	G	F-ratio
Criteria						
Vocabulary Scores	34.97	39.86	5.62*	11.46	11.02	1.04
Paragraph Comprehension Scores	28.51	33.34	6.62*	9.14	9.73	1.13
Predictors						
Verbal Intelligence Father's	92.28	98.35	5.32*	14.81	14.88	1.01
Occupation	43.33	43.09	0.47	6.41	6.91	1.16
Mother's Education	7.36	7.30	0.30	2.69	2.51	1.15
Size of Family	4.72	4.60	0.67	2.45	2.31	1.12
Days Absent	7.72	9.14	2.15*	8.70	8.62	1.02
Teacher's Qualifications	4.50	4.37	1.00	1.72	1.74	1.02
Size of School	18.27	17.07	1.65	9.56	9.43	1.03
Age of School	13.90	15.50	2.06*	9.20	10.91	1.41*

* Significance at the .05 level requires a t of 1.96 or greater when the degrees of freedom is more than 120; a t of 2.57 is required for significance at the .01 level for degrees of freedom greater than 120. See George A. Ferguson Statistical Analysis in Psychology and Education (New York: McGraw-Hill, 1966), p.167 and for cases of unequal variance, page 171.

boys. Table XIV sets forth the data. Thus, in Trinity Bay, grade six girls scored significantly higher than grade six boys on both vocabulary and paragraph comprehension. Moreover, the reading data of Table XIV, when converted into grade equivalents, indicate that for vocabulary boys scored at grade equivalent 5.7, girls 6.2 (based on U.S. Norms), and for paragraph comprehension 5.5 and 6.0 respectively.[1] These sex differences of approximately 5 months in favor of girls exceed the 3 months differences of Gates as reported in Chapter II. Table XIV indicates also that girls scored higher on verbal intelligence than boys.[2] Subsequent hypotheses will be tested separately for boys, for girls, and for boys and girls together.

II. INTELLIGENCE

Hypotheses III and IV predicted respectively that positive relationships would be found between verbal intelligence on the one hand and paragraph comprehension and vocabulary on the other. The correlation coefficients

---

[1]For conversion tables see M. J. Nelson, The Nelson Reading Test Examiner's Manual (Boston: Houghton-Mifflin Company, 1962), p. 17.

[2]Also, girls were absent more often than boys and, although this seems of no special significance, attended older buildings than boys did.

reported in Table XV between intelligence and vocabulary of .77 for boys and .78 for girls are statistically significant. The correlation coefficient between intelligence and paragraph comprehension of .69 for boys and .73 for girls, although smaller, were also statistically significant. Also the correlation coefficients of .78 between intelligence and vocabulary, and .72 between intelligence and paragraph comprehension, for boys and girls together are statistically significant. It should be noted that the correlation coefficients between intelligence and both measures of reading achievement were slightly higher for girls than for boys, and that both sets of correlations compared favourably with those found in studies mentioned in Chapter II.

For greater precision, subsequent hypotheses will be tested also with intelligence partialled out.

III. FATHER'S OCCUPATION

Hypotheses V and VI predicted that positive relationships would be found between father's education and vocabulary, and between father's education and paragraph comprehension. As indicated in Table XVI the correlations for Hypothesis V were .37 for boys, .27 for girls and .31 for both boys and girls together, and for Hypothesis VI .24 for boys, .23 for girls and .22 for boys and girls together, all being statistically significant.

However, with intelligence partialled out the statistical significance of the relationships between father's occupation and pupil's reading achievement is removed, except for vocabulary for boys and both sexes. This suggests that reading relevant differences in father's occupation are almost totally included in verbal intelligence. The fault may lie with the present study's operational definition of father's occupation, for occupation per se as with the operational definition employed.

TABLE XV

CORRELATIONS BETWEEN VERBAL INTELLIGENCE AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
Boys	361	.77	.001	.69	.001
Girls	323	.78	.001	.73	.001
Both	684	.78	.001	.72	.001

Note: Where N exceeds 100 anr of .164 is required for significance at the .05 level, .230 at the .01 level, and .321 at the .001 level. See George A. Ferguson Statistical Analysis in Psychology and Education (second edition; New York: McGraw-Hill, 1966), p. 413.

the Blishen Occupational Scale seems to have little validity in the study of local areas such as Trinity Bay, where many men, particularly fishermen, although of very different socio-economic standing occupationally, nevertheless receive the same score. The employment of a more locally valid index with finer powers of discrimination might have revealed stronger and more unique relationships between father's occupation and pupil's reading achievement.

TABLE XVI

CORRELATIONS BETWEEN FATHER'S OCCUPATION AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocab-ulary	Level of Signific-ance	Paragraph Comprehen-sion	Level of Signific-ance
(a)	Raw Correlations				
Boys	361	.37	.001	.24	.01
Girls	323	.27	.01	.23	.01
Both Sexes	684	.31	.01	.22	.05
(b)	Correlations with Intelligence Partialled Out				
Boys	361	.26	.01	.08	N.S.
Girls	323	.06	N.S.	.02	N.S.
Both Sexes	684	.17	.05	.04	N.S.

IV. MOTHER'S EDUCATION

Hypotheses VII and VIII predicted that positive relationships would be found between mother's education and vocabulary, and between mother's education and paragraph comprehension. As indicated in Table XVII the correlations for Hypothesis VII were .34 for boys, .28 for girls and .30 for boys and girls together, all being statistically significant. The correlations for Hypothesis VIII were .26 for boys, .23 for girls and .23 for boys and girls together, and again all were statistically significant.

However, with intelligence partialled out, the statistical significance of the relationships between mother's education and pupil's reading achievement is removed. As with father's occupation, this suggests that reading-relevant differences in mother's education are almost totally included in verbal intelligence.

V. SIZE OF FAMILY

Hypotheses IX and X predicted that negative relationships would be found between size of family and vocabulary, and between size of family and paragraph comprehension. As indicated in Table XVIII the correlations for Hypothesis IX were -.17 for boys, -.25 for girls and -.21 for boys and girls together, all being statistically significant; and

TABLE XVII

CORRELATIONS BETWEEN MOTHER'S EDUCATION AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	.34	.001	.26	.01
Girls	323	.28	.01	.23	.01
Both Sexes	684	.30	.01	.23	.01
(b) Correlations with Intelligence Partialled Out					
Boys	361	.12	N.S.	.03	N.S.
Girls	323	.08	N.S.	.02	N.S.
Both Sexes	684	.08	N.S.	.00	N.S.

TABLE XVIII

CORRELATIONS BETWEEN SIZE OF FAMILY AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	-.17	.05	-.11	N.S.
Girls	323	-.25	.01	-.18	.05
Both Sexes	684	-.21	.05	-.14	N.S.
(b) Correlations with Intelligence Partialled Out					
Boys	361	-.08	N.S.	-.01	N.S.
Girls	323	-.16	N.S.	-.05	N.S.
Both Sexes	684	-.10	N.S.	-.03	N.S.

for Hypothesis X -.11 for boys, -.18 for girls and -.14 for boys and girls together, with those for girls being statistically significant. These correlations suggest that the size of the family may have a slightly more adverse effect on girl's reading achievement than on the reading achievement of boys. Furthermore, size of family relates more to achievement in vocabulary than to achievement in paragraph comprehension.

However, with intelligence partialled out, the statistical significance of the relationships between size of family and pupil's reading achievement is removed. This suggest that reading-relevant differences in size of family are almost totally included in the measure of verbal intelligence.[1]

VI. ABSENTEEISM

Hypotheses XI and XII predicted that a negative relationship would be found between pupil's days absent and vocabulary, and between pupil's days absent and paragraph comprehension. However, as indicated in Table XIX, while the correlation coefficients are negative they are, with

---

[1] The correlations between I.Q. and reading achievement, and between I.Q. and family size are shown in Tables XXXI to XXXIII.

or without intelligence partialled out, of no statistical significance. Thus in the present study, absenteeism makes no measureably reliable contribution to the explanation of variation in reading achievement.

VII. TEACHER'S QUALIFICATIONS

Hypotheses XIII and XIV had predicted that positive relationships would be found between teacher qualifications and reading achievement. However, from Table XX, no statistically significant relationships were revealed by the data.

VIII. SIZE OF SCHOOL

In Chapter II literature was presented indicating a positive relationship between the size of school and reading achievement. Hypotheses XV and XVI predicted that positive relationships would be found between sixth-grade enrolment per classroom and vocabulary, and between sixth-grade enrolment per classroom and paragraph comprehension. However, as indicated in Table XXI, only for girls' vocabulary scores was the relationship with school size found to be statistically significant, and that barely so (.16 vocabulary, .13 paragraph comprehension). For boys the correlations of .01 and -.02 were not statistically significant, nor were the correlations of .06 and .03 for

TABLE XIX

CORRELATIONS BETWEEN ABSENTEEISM AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	-.11	N.S.	-.09	N.S.
Girls	323	-.14	N.S.	-.07	N.S.
Both Sexes	684	-.11	N.S.	-.07	N.S.
(b) Correlations with Intelligence Partialled Out					
Boys	361	-.02	N.S.	-.003	N.S
Girls	323	-.03	N.S.	.06	N.S.
Both Sexes	684	-.02	N.S.	.03	N.S.

TABLE XX

CORRELATIONS BETWEEN TEACHERS'S QUALIFICATIONS AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	.10	N.S.	.01	N.S.
Girls	323	.11	N.S.	.02	N.S.
Both Sexes	684	.09	N.S.	.00	N.S.
(b) Correlations with Intelligence Partialled Out					
Boys	361	-.02	N.S.	-.11	N.S.
Girls	323	-.02	N.S.	-.13	N.S.
Both Sexes	684	-.02	N.S.	-.13	N.S.

TABLE XXI

CORRELATIONS BETWEEN SIZE OF SCHOOL AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	.01	N.S.	-.02	N.S.
Girls	323	.16	.05	.13	N.S.
Both Sexes	684	.06	N.S.	.03	N.S.
(b) Correlations with Intelligence Partialled Out					
Boys	361	-.05	N.S.	-.07	N.S
Girls	323	.00	N.S.	-.03	N.S.
Both Sexes	684	-.04	N.S.	-.07	N.S.

boys and girls together. With intelligence partialled out, statistical significance disappeared and five of the six relationships became slightly negative. Thus the present study finds no appreciable or consistent relationship between size of school, as measured by grade six enrolment in the classroom and reading achievement.

IX. AGE OF SCHOOL

Hypotheses XVII and XVIII predicted that negative relationships would be found between age of school building and vocabulary, and between age of school building and paragraph comprehension. However, as shown in Table XXII, all correlations with and without intelligence partialled out were without statistical significance. The present study found no relationship to exist between the age of a school building and the reading achievement of the grade six pupils.

X. SOCIOECONOMIC VERSUS EDUCATIONAL INPUTS

This section tests the major hypotheses of this study, namely that socioeconomic variables will be more closely related to the two measures of reading achievement used than will educational variables.

Three procedures will be used to test these hypotheses. First there will be set forth a comparison of the size of the correlation coefficients between socioeconomic variables and reading achievement. Secondly, this comparison will be made with intelligence partialled out. Finally, a multiple regression analysis will be carried out to assess the effects on the multiple correlation coefficient of adding educational inputs to socioeconomic inputs.

TABLE XXII

CORRELATIONS BETWEEN AGE OF SCHOOL AND READING ACHIEVEMENT AS MEASURED BY VOCABULARY AND PARAGRAPH COMPREHENSION SUBTESTS

Sex	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
(a) Raw Correlations					
Boys	361	-.02	N.S.	-.02	N.S.
Girls	323	-.05	N.S.	-.03	N.S.
Both Sexes	684	-.02	N.S.	.00	N.S.
(b) Correlations with Intelligence Partialled Out					
Boys	361	.01	N.S.	.00	N.S.
Girls	323	-.03	N.S.	.00	N.S.
Both Sexes	684	-.02	N.S.	.02	N.S.

Correlation Coefficients

Considerable support for the major hypotheses comes from Table XXIII where the correlations between socioeconomic inputs and both vocabulary and paragraph comprehension were noticeably higher, and more often statistically significant, than the correlations for educational inputs.

All of the correlation coefficients between the socioeconomic inputs (except absenteeism) and vocabulary were significant beyond the .05 level, whereas there was only one statistically significant correlation between educational inputs and vocabulary, Moreover, seven of the twelve correlation coefficients between socioeconomic inputs and paragraph comprehension were statistically significant, but not one significant correlation coefficient was found between educational inputs and paragraph comprehension.

It should be noted that most of the correlations between socioeconomic inputs and reading achievement were significant beyond the .01 level, some at the .001 level.

Correlation Coefficients Intelligence Partialled Out

However, with intelligence partialled out, as indicated in Table XXIV, the statistical significance of the relationships between socioeconomic inputs and reading

TABLE XXIII

COEFFICIENTS INDICATING THE CORRELATIONS OF SOCIOECONOMIC AND EDUCATIONAL INPUT VARIABLES WITH READING ACHIEVEMENT

	Vocabulary			Paragraph Comprehension		
	B	G	Total	B	B	Total
Socioeconomic Inputs						
Father's Occupation	.37*	.27*	.31*	.24*	.23*	.22*
Mother's Education	.34*	.28*	.30*	.26*	.23*	.23*
Size of Family	-.17*	-.25*	-.21*	-.11	-.18*	-.14
Absenteeism	-.11	-.14	-.11	-.09	-.07	-.07
Educational Inputs						
Teacher's Qualifications	.10	.11	.09	.01	.02	.00
Classroom Enrolment	.01	.16*	.06	-.02	.13	.03
Age of School	-.02	-.05	-.02	-.02	-.03	.00
Intelligence						
Verbal	.77*	.77*	.78*	.68*	.73*	.72*

*Significant at or beyond the .05 level
Source: Taken from Tables XXXI to XXXIII, Appendices O to Q

TABLE XXIV

COEFFICIENTS INDICATING THE CORRELATIONS OF SOCIOECONOMIC AND EDUCATIONAL INPUT VARIABLES WITH READING ACHIEVEMENT AFTER INTELLIGENCE HAS BEEN PARTIALLED OUT

	Vocabulary			Paragraph comprehension		
	B	G	Total	B	G	Total
Socioeconomic Inputs						
Father's Occupation	.26*	.06	.17*	.08	.02	.04
Mother's Education	.12	.08	.08	.03	.02	.00
Size of Family	-.08	-.16*	-.10	-.01	-.05	-.03
Absenteeism	-.02	-.03	-.02	-.003	.06	.03
Educational Inputs						
Teacher's Qualifications	-.02	-.02	-.02	-.11	-.13	-.13
Classroom Enrolment	-.05	.00	-.04	-.07	-.03	-.07
Age of School	.01	-.03	-.02	.00	.00	.02

* Significant at or beyond the .05 level.
Source: Taken from Tables XVI to XXII of this report.

achievement was removed except for father's occupation for boys, and for boys and girls together, and for size of family for girls, all being for vocabulary. There was no statistically significant coefficient left between socio-economic inputs and paragraph comprehension.

Furthermore, partialling out intelligence removed the one statistically significant relationship that existed between educational inputs and reading achievement. In both instances, that is with intelligence in and with intelligence partialled out, three of the four socioeconomic inputs are much more closely related to reading achievement than are the educational inputs.

Multiple Regression Analysis

The purpose of this analysis was to find the relative importance of each of the eight predictors in the prediction of each of the criteria used in the study, but more especially to compare the importance of socioeconomic inputs with that of educational inputs in determining reading achievement.[1] The following inputs were used in the analysis as dependent variables:

Symbol	Output Variable
V	Vocabulary Scores
PC	Paragraph Comprehension Scores

---

[1]The procedure used in presenting this analysis

The following input variables were used as independent variables:-

Symbol	Input Variables
	Socioeconomic Inputs
FO	Father's Occupation
ME	Mother's Education
SF	Size of Family
DA	Days Absent
	Educational Inputs
TQ	Teacher's Qualifications
CE	Classroom Enrolment
AS	Age of School
	Intelligence
IQ	Intelligence Quotient

The order of the introduction of the input variables in the stepwise regression was as described in Chapter III, namely, with the exception of TQ and IQ, in the descending value of the correlation of each independent variable with the dependent variable. In all instances this resulted in the socioeconomic variables being introduced first, the

---

follows that used by Burkhead, op. cit.in his study of input and output in large high schools, and in small-community high schools.

educational input variables next, and intelligence last.

No correction was applied to R, the coefficient of multiple correlation, because the sample was large and the number of variables was small.[1]

Vocabulary Scores: boys. The beta coefficients as well as the multiple correlation coefficients for the combinations of two, three, four, five, six, seven and eight predictor variables for vocabulary for boys are shown in Table XXV. Here the variables account for 61 per cent of the variance in sixth-grade vocabulary scores for boys (R^2_m = .61). Father's occupation, mother's education and size of family remain consistently important until intelligence is introduced. Size of family is negative as would be expected. Vocabulary scores for boys are associated very little with age of school, size of school, teacher's qualifications, or days absent. The introduction of I.Q. into the equation greatly reduces the importance of the socioeconomic inputs, except for father's occupation, in the explanation of boys vocabulary scores, and practically eliminates the little explanatory power previously shown by educational inputs. In fact, age of school, teacher's

---

[1] Henry E. Garrett, Statistics in Psychology and Education (New York: David McKay Co. Inc., 1966), p. 416.

TABLE XXV

THE PREDICTORS OF VOCABULARY SCORES OF BOYS IN TRINITY BAY, NEWFOUNDLAND (N = 361)

(Beta Coefficients)

	R_m	FO	ME	SF	DA	AS	CE	TQ	IQ
FO	.37	.37							
+ME	.43	.24	.29						
+SF	.46	.24	.27	-.15					
+DA	.46	.24	.27	-.15	-.06				
+AS	.46	.23	.28	-.15	-.07	.04			
+CE	.46	.24	.28	-.15	-.06	.00	-.06		
+TQ	.47	.24	.28	-.15	-.06	-.01	-.09	.09	
+IQ	.79	.19	.03	-.05	.00	-.07	.00	.00	.71

R_m = Coefficient of Multiple Correlation.

qualifications and days absent lose all predictive value with the addition of intelligence. Of the 62 per cent (R_m^2 = 62, where R_m = 79, Table XXV) of the variance in sixth-grade vocabulary accounted for by all eight variables, the socioeconomic variables account for 21 per cent (R_m = .46 at +DA in Table XXV) intelligence for about 40 per cent (R_m = .47 at +TQ in Table XXV and $.79^2 - .47^2$ = 40), and the educational inputs for only 1 per cent ($.47^2 - .46^2$ from Table XXV).[1]

Vocabulary Scores: girls. Table XXVI shows the pattern of determinants for variations in vocabulary scores for girls. The most important socioeconomic variable is mother's education, which accounts for 8 per cent of the variance before other variables are added. As with boys, the beta coefficients for the socioeconomic variables remain consistently large until intelligence becomes a part of the regression. The size of the family shows an apparently high negative relationship with girl's vocabulary scores. The days absent is unimportant as are classrooms enrolment (size of school), age of school, and teacher's qualifications. Most of the coefficients remain stable (indicating that they do not take away from each other's

---

[1] These percentages are based on the fact that by squaring a multiple correlation you arrive at the percentage of explained variance.

TABLE XXVI

THE PREDICTORS OF VOCABULARY SCORES OF GRADE SIX GIRLS IN TRINITY BAY NEWFOUNDLAND (N = 323)

(Beta Coefficients)

	R_m	ME	FO	SF	CE	DA	AS	TQ	IQ
ME	.28	.28							
+FO	.34	.22	.20						
+SF	.41	.20	.20	-.23					
+CE	.42	.19	.19	-.22	.08				
+DA	.42	.17	.19	-.22	.08	-.06			
+AS	.42	.18	.19	-.22	.09	-.06	.02		
+TQ	.42	.17	.20	-.22	.07	-.06	.01	.05	
+IQ	.78	.04	.03	-.10	-.02	.00	.02	.00	.73

R_m = Coefficient of Multiple Correlation.

importance) until intelligence is added. Although the variables except ME, FO, and SF, do not diminish each other's relative importance, neither do they add anything to explaining variance in girls' vocabulary scores. In fact there is no change in the multiple correlation coefficient after class size is added until intelligence is introduced into the regression equation.

The socioeconomic variables account for 17 per cent of the 61 per cent of the variations in girls' vocabulary scores explained by the model (Table XXVI), while intelligence accounts for 43 per cent of that variance, and educational input variables for the other 1 per cent.

Vocabulary Scores: total. As with boys, father's occupation showed the highest correlation coefficient with vocabulary scores for boys and girls together. As Table XXVII indicates only father's occupation, mother's education (ME), and size of family (SF), with the exception of intelligence, added anything to the multiple correlation coefficient. The other variable neither added to the explained variance, nor, with the exception of size of school, took away from the explanatory importance of the four socioeconomic variables. Vocabulary scores for boys and girls together are not associated with age of school, size of school, or with teacher's qualifications.

The socioeconomic variables explain approximately

17 per cent , intelligence 45 per cent, and educational input variables none of the variations in vocabulary scores for boys and girls together.

Hypothesis XIX predicted that socioeconomic variables would be more closely related to vocabulary scores than would educational variables. This has been found in all three analyses conducted to test the hypothesis, namely the correlation coefficients analysis, the correlation coefficients with intelligence partialled out analysis, and the multiple regression analysis. The results of the latter analysis are especially revealing.

Paragraph Comprehension Scores: boys. The explanatory power of the input variables used is about the same for boys' paragraph comprehension scores, as is shown in Table XXVIII, as it was for boys' vocabulary scores. The coefficient of multiple determination has a slightly lower value (R_m^2 = .52). Again, mother's education and father's occupation are the inputs, excepting of course intelligence, that dominate paragraph comprehension outcome. The size of family does add slightly to the explanation of variation in boys' comprehension scores, and it remains negative, as would be expected. Days absent, age of school, size of school and teacher's qualifications are not particularly associated, if at all, with paragraph comprehension scores of boys.

TABLE XXVII

THE PREDICTORS OF VOCABULARY SCORES OF BOYS AND GIRLS IN GRADE SIX IN TRINITY BAY, NEWFOUNDLAND
(N = 684)

(Beta Coefficients)

	R_m	FO	ME	SF	DA	CE	AS	TQ	IQ
FO	.31	.31							
+ME	.37	.24	.22						
+SF	.42	.23	.22	-.19					
+DA	.42	.22	.22	-.18	-.05				
+CE	.42	.22	.21	-.18	-.05	.04			
+AS	.42	.22	.21	-.18	-.05	.05	.03		
+AS	.42	.22	.21	-.18	-.05	.03	.02	.04	
+IQ	.79	.10	.04	-.08	.01	-.03	-.01	.00	.73

R_m = Coefficient of Multiple Correlation.

TABLE XXVIII

THE PREDICTORS OF PARAGRAPH COMPREHENSION SCORES OF GRADE SIX BOYS IN TRINITY BAY, NEWFOUNDLAND (N = 361)

(Beta Coefficients)

	R_m	ME	FO	SF	DA	AS	CE	TQ	IQ
ME	.26	.26							
+FO	.30	.20	.17						
+SF	.32	.20	.16	-.09					
+DA	.34	.20	.17	-.10	.12				
+AS	.34	.21	.17	-.10	.12	.00			
+CE	.35	.21	.18	-.10	.12	-.02	-.07		
+TQ	.35	.21	.18	-.10	.12	-.02	-.07	.01	
+IQ	.72	.00	.09	.00	.19	-.01	-.05	-.08	.70

R_m = Coefficient of Multiple Correlation.

When intelligence is added to the equation the explanatory power of the socioeconomic variables is greatly reduced; except for that of days absent which increases. Both the positive direction of the beta coefficients for days absent and the increase in the beta coefficient when intelligence is added are inexplicable. It was negative in direction for vocabulary for boys, for girls, and for total, but did become .00 or .01 when intelligence was added.

The socioeconomic variables explain about 12 per cent of the 52 per cent of variations in boys' paragraph comprehension scores explained by the model, intelligence accounts for 40 per cent, and educational input variables for approximately one-half of one per cent.

Paragraph Comprehension Scores: girls. Only mother's education, father's occupation, and teachers' qualifications have any effect, with the exception of intelligence, on the size of the multiple correlation coefficient as indicated in Table XXIX. Again the size of the size of family beta coefficients are negative as expected, and remain unchanged until intelligence is added. The addition of the educational input variables, except TQ, have no effect on either the size of the correlation coefficients or the beta coefficients of the socioeconomic variables. In short, none of the educational input variables, except perhaps TQ, contributes

TABLE XXIX

THE PREDICTORS OF PARAGRAPH COMPREHENSION SCORES OF GRADE SIX GIRLS IN TRINITY BAY, NEWFOUNDLAND (N = 323)

(Beta Coefficients)

	R_m	ME	FO	SF	CE	DA	AS	TQ	IQ
ME	.29	.29							
*FO	.33	.18	.18						
*SF	.33	.17	.17	-.15					
*CE	.33	.16	.17	-.15	.07				
+DA	.33	.16	.17	-.15	.07	-.01			
+AS	.33	.16	.17	-.15	.07	-.01	.02		
+TQ	.34	.16	.17	-.15	.10	-.01	.03	-.05	
+IQ	.74	.02	.01	-.03	.01	.04	.00	-.10	.74

R_m = Coefficient of Multiple Correlation.

any explanatory power.

When intelligence is added most of the beta coefficients of the other variables are drastically reduced, and the explanatory power of the model is increased from 12 per cent to 55 per cent. The socioeconomic variables contribute 11 per cent of the explanatory power of the model's 55 per cent as per variations in girls' paragraph comprehension scores; intelligence accounts for 43 per cent, and the educational input variables for the remaining 1 per cent.

Paragraph Comprehension Scores; total. As with boys and girls separately, so also with boys and girls together mother's education showed the highest correlation with paragraph comprehension scores. As depicted in Table XXX the importance of mother's education, father's occupation and size of family is consistant until intelligence is added. The educational input variables, as well as the socioeconomic variable days absent (DA), are unimportant in explaining paragraph comprehension scores for sixth-grade boys and girls together. In fact their addition to the equation affects neither the multiple correlation coefficients (R_m) nor the beta coefficients of the socioeconomic variables ME, FO and SF.

Moreover, when intelligence is added the explanatory power of the model is increased from 10 per cent to 53 per

cent, and the beta coefficients of nearly all the other variables, and thus their prediction power, are decreased. The educational input variables do not account for any of the variations in paragraph comprehension scores for boys and girls together.

Hypothesis XX predicted that socioeconomic variables would be more closely related to paragraph comprehension scores than would educational input variables. The findings from all three analyses conducted to test this hypothesis have supported its prediction.

XX. SUMMARY

The application of the F-ratio and the t-test to results for boys and girls on the vocubulary and paragraph comprehension subtests showed that boys and girls differ significantly in their achievement on paragraph comprehension and vocabulary, thus supporting Hypotheses I and II.

Hypotheses III to XVIII were tested for boys, for girls, and for boys and girls together, using the product-moment correlations in their raw form, and also the correlations with intelligence partialled out. All hypotheses were shown to be in the correct direction, but the effect of partialling out intelligence was in many instances to eliminate statistical significance.

TABLE XXX

THE PREDICTORS OF PARAGRAPH COMPREHENSION SCORES OF BOYS AND GIRLS TOGETHER IN TRINITY BAY, NEWFOUNDLAND (N = 684)

(Beta Coefficients)

	R_m	ME	FO	SF	DA	CE	AS	TQ	IQ
ME	.23	.23							
+FO	.28	.18	.17						
+SF	.31	.18	.16	-.12					
+DA	.31	.17	.16	-.12	-.02				
+CE	.31	.18	.16	-.12	-.02	-.02			
+AS	.31	.17	.16	-.12	-.02	-.01	.01		
+TQ	.31	.18	.16	-.12	-.03	.00	.02	-.03	
+IQ	.73	.00	.04	-.01	.03	-.02	.00	-.09	.72

R_m = Coefficient of Multiple Correlation.

Three analyses were used to test the major hypotheses, and all three showed the socioeconomic variables to be much more closely related to both vocabulary scores and paragraph comprehension scores than were the educational input variables. The close relationship between intelligence and reading achievement was very clearly demonstrated. Also clearly demonstrated was the great extent intelligence affected these other variables in that their power to predict reading scores was greatly reduced and sometimes eliminated when intelligence was added to the regression equation. Incidentally, while the input variables explained 62 per cent of the variance in vocabulary scores they explained only 52 per cent of the variance in paragraph comprehension.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. SUMMARY OF THE STUDY

The Problem

The purpose of this study was to test the hypothesized relationships between reading achievement, as measured by vocabulary and paragraph comprehension, and selected socioeconomic and educational variables for grade six pupils in Trinity Bay, Newfoundland. The major hypothesis stated that socioeconomic variables would be more closely associated with reading achievement than would educational input variables.

A number of minor hypotheses were concerned with sex differences in reading achievement, with variations in reading achievement associated with intelligence, with such socioeconomic inputs as father's occupation, mother's education, size of family and absenteeism, and with such educational inputs as teacher's qualifications, size of school, and age of school.

The Sample

The sample consisted of 746 grade six pupils in Trinity Bay, for 684 of whom complete data were available.

Instrumentation

The Nelson Reading Test 1962 Revised Edition, was used to measure reading achievement, and its raw scores were used in the analyses.

Deviation I.Q.'s gained from administering Form 3AV of the Lorge-Thorndike Intelligence Tests were used as measures of verbal intelligence.

Information on parents, size of family, teachers, and schools was gathered by means of questionnaires. Many of the results from these were verified by teachers and principals.

The testing program was carried out from May 1, 1968 to May 21, 1968 in cooperation with two co-workers who were gathering information on the same samples for similar research projects using other output data.

All data from the tests and questionnaires had been put on coding sheets for punching on I.B.M. cards by May 22, 1968. Multiple regression and other analyses associated with it were carried out by the computer services of Memorial University. These analyses were used to test the hypotheses of the study.

Main Findings

Several of the main findings should be noted:

1. The median I.Q. of the pupils in the sample was

six points below national U.S. norms, while on the reading test they were seven months behind in vocabulary and fourteen months in paragraph comprehension.

2. Girls were found to be ahead of boys in reading achievement by five months on both tests, and on I.Q. by six points.

3. The occupational status of ninety per cent of the fathers was in the last three of the seven categories of the Blishen Scale. Mother's median education was 7.5 years of schooling.

4. The qualifications of the teachers in the sample, with a median of B Licence, were well below those of Newfoundland as a whole.

5. In both the descriptive and the statistical analyses verbal intelligence was found to be very closely associated with reading achievement. This was especially noticeable in the multiple regression analysis, where without exception intelligence explained more of the variations in sixth-grade reading achievement than any other variable.

6. Both the product-moment correlation analysis and the multiple regression analysis showed father's occupation and mother's education to be more closely related to reading achievement than any other of the socioeconomic

and educational variables used as inputs. Father's occupation and size of family were the only input variables to retain any statistical significance after intelligence had been partialled out. Furthermore, in the multiple regression analysis father's occupation, mother's education and, sometimes and to a lesser extent, size of family accounted for nearly all the variations in reading achievement that was contributed by the socioeconomic and educational input variables.

7. The larger the family the poorer the pupil's achievement in reading, was the general trend found in the study.

8. Only a slight association was found between teacher's qualifications and sixth=grade pupil's reading achievement.

9. No relationship was found between age of school or size of school and reading achievement.

10. The major finding that came from this study was from the testing carried out on the major hypotheses. All three analyses performed indicated the very significant importance of socioeconomic input variable in accounting for variations in grade six reading achievement, as contrasted with the little, if any, significance of the educational input variables. In general, the model used accounted for approxiamtely 60 per cent (R_m^2) of the variations in sixth-

grade reading achievement. That percentage was usually distributed 45 per cent, 14 per cent and 1 per cent among the intellectual, socioeconomic and educational input variables respectively. The explanatory power of the model for the variations in vocabulary scores was consistently greater than its explanatory power for variations in paragraph comprehension; it accounted for approximately 63 per cent of the former and about 52 per cent of the latter.

II. RECOMMENDATIONS

A number of recommendations emerge from the findings of the present study:

1. That more attention be given to differences among pupils, particularly on the basis of sex with elementary schools devoting more care and attention than at present to boys.

2. Whereas children with different verbal intelligence were found to achieve differently in reading, there does seem to be need for more serious consideration being given to grouping of pupils, and to the curriculum content being 'fed' them - they are not all able to profit equally from the same type, length and substance of instruction. Elsewhere attempts have been made through various projects to compensate for various components lacking in the children's environments,

and have met with good results.[1]

3. Since pupils were further below the norms on paragraph comprehension (1.2 grades) than on vocabulary (.7 grades) it can perhaps be suggested that more attention be given in the reading program to comprehension.

4. Since considerable relationship was found between socioeconomic inputs and reading achievement, it would seem that improvements in reading might be achieved through efforts made to upgrade the socioeconomic factors in pupils' environment. This can perhaps be done by upgrading father's occupation, mother's education and reducing family size. Greater importance should perhaps be placed on programs of adult education and family planning, especially in rural Newfoundland. Certainly the findings of the present study suggest the need for a realization of the importance of out-of-school variables to pupil achievement in reading.

5. The slight association found between teacher's qualifications and reading achievement suggests not that there is no need for qualified teachers, but rather, perhaps, a need for redefinition of qualifications and for teachers whose training is more relevant than at present to the jobs teachers are expected to perform including the teaching of

---

[1] Carl Bereiter and Seigfried Engleman, Teaching Disadvantaged Children in Preschool (New Jersey: Prentice Hall Inc., 1966).

reading to rural children in semi-literate households.

III. SUGGESTIONS FOR FURTHER RESEARCH

1. There is need for a similar study to be carried out in a rural area that has a higher socioeconomic level than the area used in this study. Important to such a study would be a wide socioeconomic range of occupations.

2. The Blishen Occupational Scale seems to an important degree to be outdated for research in 1968, and to be too urbanized for study in rural Newfoundland. For example, all fishermen are grouped in the same occupational group, when in fact there are many classes of fishermen. Research aimed at producing a discriminating occupational rating scale for rural areas would be most beneficial.

3. Since only about 50 - 60 per cent of the variance in reading achievement has been explained by the input variables used in the present study, studies are necessary to identify the other factors contributing to variations in reading achievement.

4. The relationships between the educational output variables and various input variables used in this study need to be researched in greater depth, particularly the variables teachers' qualifications, enrolment per classroom, and family size.

BIBLIOGRAPHY

A. BOOKS

Bereiter, Carl, and Seigfried Engleman. Teaching Disadvantaged Children in Preschool. New Jersey: Prentice Hall, Inc. 1966.

Bloom, Benjamins S., Allison Davis, and Robert Hess. Compensatory Education for Cultural Deprivation. New York: Holt Rinehart and Winston, Inc. 1965.

Burkhead, Jesse, with Thomas G. Fox and John W. Holland. Input and Output in Large-City High Schools. New York: Syracuse University Press, 1967.

Buros, Oscar K. (ed.). Fifth Mental Measurements Yearbook. New Jersey: The Gryphon Press, 1960.

Buros, Oscar K. (ed.). Sixth Mental Measurements Yearbook. New Jersey: The Gryphon Press, 1965.

Cheal, John E. Investment in Canadian Youth; An Analysis of Input-Output Differences among Canadian Provincial School Systems. Toronto: McMillan, 1963.

Ezekiel, Mordecai, and Karl A. Fox. Methods of Correlations and Regression Analysis. Third edition. New York: John Wiley and Sons, 1959.

Ferguson, George A. Statistical Analysis in Psychology and Education. Second edition. New York; McGraw and Hill Book Company, 1966.

Garrett, Henry E. Statistics in Psychology and Education. New York: David McKay Co. Inc. 1966.

Havighurst, Robert J. and Bernice L. Neugarten, Society and Education. Boston: Allyn and Bacon, 1967.

Robinson, Helen M. Why Pupils Fail Reading. Chicago: The University of Chicago Press, 1946.

Riesman, Frank. The Culturally Deprived Child. New York: Harper and Row, Publishers, 1962.

Witty, Paul, and David Kopel. Reading and the Educative Process. Boston: Ginn and Co., 1939.

B. PUBLICATIONS OF GOVERNMENT, LEARNED SOCIETIES AND OTHER ORGANIZATIONS

Bennett, Chester C. "An Inquiry into the Genesis of Poor Reading." Teachers' College Contributions to Education No 755. New York: Bureau of Publications, Columbia University, 1938. cited in Sheldon, W.D. and Lawrence Carrillo, "Relation of Parents, Home and Certain Developmental Characteristics to Children's Reading Ability," Elementary School Journal, Vol. 52, January, 1952, pp. 262 - 271.

Lorge, Irving and Robert L. Thorndike. The Lorge-Thorndike Intelligence Tests Technical Manual. Boston: Houghton Mifflin Company, 1962.

Lorge, Irving, and Robert L. Thorndike. The Lorge-Thorndike Intelligence Tests Examiner's Manual. Boston: Houghton Mifflin Company, 1957.

Nelson, M. J. The Nelson Reading Test Examiner's Manual. Boston: Houghton Mifflin Company, 1962.

Newfoundland Department of Education. News Letter. St. John's: Vol. 16, No. 1 (September, 1964).

Newfoundland Department of Education. News Letter. St. John's: Vol. 16. No. 3 (November, 1964).

Newfoundland Department of Education. News Letter. St. John's: Vol. 17. No. 2. (October, 1965).

Newfoundland Department of Education, News Letter. St. John's: Vol. 16. No. 5. (January, 1965).

Newfoundland Department of Education. Statistical Supplement to the Annual Report of the Department of Education for the School Year ended June 30th. 1966.

Newfoundland Department of Education. Statistical Supplement to the Annual Report of the Department of Education for the School Year ended June 30th. 1967.

Province of Newfoundland and Labrador. Report of the Royal Commission on Education and Youth. Volume 1. St. John's: The Queen's Printer, 1967.

C. PERIODICALS

Chauncey, Marlin R. "The Relation of the Home Factor to Achievement and Intelligence Test Scores," Journal of Educational Research, Vol. 20. 1929, pp. 88-90.

Curry, Robert L. "The Effects of Socio-Economic Status on the Scholastic Achievement of Sixth-Grade Children," British Journal of Educational Psychology, Vol. 32, 1962, pp. 46 - 49.

Coleman, Hubert A. "Relationships of Socio-Economic Status to the Performance of Junior High School Pupils," Journal of Experimental Education, Vol. 9, 1940, pp. 61-63.

Collins, Joseph H., and H. R. Douglass. "The Socio-Economic Status of the Home as a Factor in Success in the Junior High School," Elementary School Journal, Vol. 38, October, 1937, pp. 107 - 113.

Douglas, J. W. B. and J. M. Ross. "The Effects of Absence on Primary School Performance, "The British Journal of Educational Psychology, Vol. 35, February, 1965, pp. 28 - 40.

Gates, Arthur I. and Guy L. Bond. "Reading Readiness: A Study of Factors Determining Success and Failure in Beginning Reading," Teachers' College Record, Vol. XXXVII, May, 1936, pp. 677 - 685.

Gates, Arthur I. "Sex Differences in Reading Ability," Elementary School Journal, Vol. 61, May, 1961, pp. 431 - 434.

Gough, Harrison. "Relationship of Socio-Economic Status to Personality Inventory and Achievement Test Scores," Journal of Educational Psychology, Vol. 37, 1946, pp. 527 - 543.

Hill, Edwin, and Michael Giematteo, "Socio-Economic Status and its Relationship to School Achievement in the Elementary School," Elementary English, Vol. 40, 1963, pp. 265 - 270.

Monroe, Marion and Bertle Backus, et. al. Remedial Reading: A Monograph in Character Education, Boston: Houghton Mifflin, Co. 1937.

Neighbours, O. J. "Retardation in the Schools and Some of the Causes, "Elementary School Teacher, 11, 1910 pp. 119 - 135, cited by Hill and Giamatteo (above).

Powell, Marvin, and Henry A. O'Connor. "Further Investigations of Sex Differences in Achievement of Under-Average-. and Over-Achieving Students within Five I.Q. Groups in Grades Four through Eight," Journal of Educational Research, Vol. 57, January, 1964, pp. 268 - 270.

Shaw, Duane. "The Reaction of Socio-Economic Status to Educational Achievement in Grades Four through Eight," Journal of Educational Research, Number 37, 1943, pp. 197 - 201.

Sheldon, William D., and Lawrence Carrillo. "Relation of Parents, Home and Certain Developmental Characteristics to Children's Reading Ability," Elementary School Journal, Vol. 52, January, 1952, pp. 262 - 271.

Smith, Herbert A., and L. L. Penny, "Educational Opportunity as a Function of Socio-Economic Status," School and Society, Vol. 87, 1959, pp. 342 - 344.

D. UNPUBLISHED MATERIALS

Kitchen, H. W. A Preliminary Study of Demographic and Socio-Economic Factors in the Atlantic Provinces and their Relationships to Measures of Educational Output, October, 1967. (Mimeographed.)

Ralph, Stuart. "Socio-Economic Versus Educational Inputs as Related to Grade Six Language Achievement in Rural Newfoundland." "Master's thesis in process, Memorial University of Newfoundland, St. John's, 1968.

Roe, Geraldine. "Socio-Economic Versus Educational Inputs as Related to Grade Four Reading in Urban Newfoundland." Master's thesis in process, Memorial University of Newfoundland, St. John's, 1968.

Tetley, Dorothy Ferne. "The Relationship of Certain Teacher Characteristics to Pupil Achivement in Reading." Unpublished Master's thesis, University of Alberta, 1964.

APPENDIXES

APPENDIX A

LETTER TO THE SUPERINTENDENTS OF EDUCATION

P.O. Box 81
Education Building
Memorial University
St. John's, Nfld.
March 5, 1968

Mr. G. Shaw
Superintendent of Education
Department of Education
Confederation Building
St. John's, Nfld.

Dear Sir:

The three undersigned graduate students in Educational Administration at Memorial University are contemplating conducting, under the auspices of the Faculty of Education of the University, a study involving all the Grade Six students in all the schools in the electoral districts of Trinity North and Trinity South in the province of Newfoundland.

We are, therefore, asking your permission to allow us to contact the school boards, principals, and teachers involved. We wish to contact them for permission to enter the schools on a pre-arranged date to administer the required examinations. If the necessary permissions are given we shall be giving examinitions in reading, arithmetic, and language, as measures of school achievement. In addition we shall administer both a verbal and a non-verbal I.Q. test, and collect data on class size and teacher qualifications.

Please accept our thanks in advance for any help and cooperation you can give us.

Yours truly,

R. Noel

H. Pollard

J. S. Ralph

APPENDIX B

LETTER FROM THE UNITED CHURCH SUPERINTENDENT

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Education

St. John's

March 8, 1968

Mr. H. Pollard,
P.O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Mr. Pollard:

In reply to your letter of March 5, I wish to inform you that I would have no objection to your contacting the school boards of your choice for the purpose of conducting studies in connection with your Master's program. If you require any kind of specific letter I would be happy to provide it to you, if this letter is not suitable for your purposes.

Yours truly,

John Acreman,
Superintendent of Education
(United Church)

JA/hnb

APPENDIX C

LETTER FROM THE ROMAN CATHOLIC SUPERINTENDENT

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Education

St. John's

March 7, 1968

Mr. R. Noel
P.O. Box 81
Education Building
Memorial University
St. John's, Nfld.

Dear Sir:

This is in reply to your letter of March 5 regarding the research project you propose to carry out in the schools of Trinity North and Trinity South. Rest assured of my fullest co-operation.

With every good personal wish,

I remain,
Sincerely yours,

F. R. KENNEDY,
SUPERINTENDENT OF EDUCATION

FRK-cm

APPENDIX D

LETTERS FROM THE ANGLICAN SUPERINTENDENT

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Education

St. John's,

March 8, 1968

Mr. R. Noel, Mr. Pollard, and Mr. Ralph,
P. O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Mr. Noel, Mr. Pollard, and Mr. Ralph:

You hereby have my blessing to contact our School Boards and principals in Trinity North and Trinity South. I am also enclosing a memorandum which you might find useful, in case some School Board or principal is reluctant to cooperate.

Yours truly,

C. Roebothan,
Superintendent of Education
(Anglican)

CR/hnb
Encl.

APPENDIX D (CONTINUED)

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Education

St. John's

March 8, 1968

Memorandum to:
Anglican School Boards and Principals
in Trinity North and Trinity South:

Mr. R. Noel, Mr. H. Pollard, and Mr. J. S. Ralph, three graduate students in Educational Administration at Memorial University, are undertaking a study involving the Grade VI students in all of the schools in Trinity North and Trinity South.

I have given my support to their project, and I am hereby suggesting that our Anglican School Boards and principals cooperate with these gentlemen in every way possible. Their study is an integral part of their Master's program at the University, but the results of it should contain data and information which will be important to all of us.

Thank you for your anticipated cooperation.

Yours truly,

Cecil Roebothan,
Superintendent of Education,
(Anglican)

CR/hnb

APPENDIX E

LETTER FROM SALVATION ARMY SUPERINTENDENT

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Education

St. John's

March 15, 1968

Messrs. Noel, Pollard, Ralph,
P. O. Box 81,
Education Building,
Memorial University,
St. John's, Nfld.

Dear Sirs

In reply to your letter of March 5th, I may say that I am happy to grant permission to you to contact the School Boards, Principals and teachers involved in the district mentioned in your letter. I understand that this is necessary so that you can complete graduate work in the educational research.

Yours sincerely,

W. C. WOODLAND,
Superintendent of Education, S.A.

WCW-ms

APPENDIX F

LETTER TO THE SCHOOL BOARD CHAIRMEN

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
St. John's, Newfoundland, Canada

P. O. Box 81
Education Building
Memorial University of
Newfoundland

March 26, 1968

Dear Sir:

In cooperation with our faculty advisor, Dr. H.W. Kitchen we, a group of three graduate students in Educational Administration at Memorial University of Newfoundland, are intending to collect information having to do with achievement and other factors related to all Grade 6 students of Trinity North and Trinity South. The purpose of the proposed study is to discover relationships between achievement in Grade 6 and certain selected social and environmental factors.

To gather the necessary information for the study we hope to be working in each of your schools which have Grade 6 students for approximately one day. Soon we plan to contact the principals of the schools involved to arrange a visitation and examination schedule. We have already received approval for this project from your superintendent at the Department of Education.

If you have any questions concerning the proposed study, or reservations about our contacting your principals, Grade 6 teachers, and students, we would certainly appreciate hearing from you.

Sincerely yours,

R. Noel

H. A. Pollard

J. S. Ralph

APPENDIX G

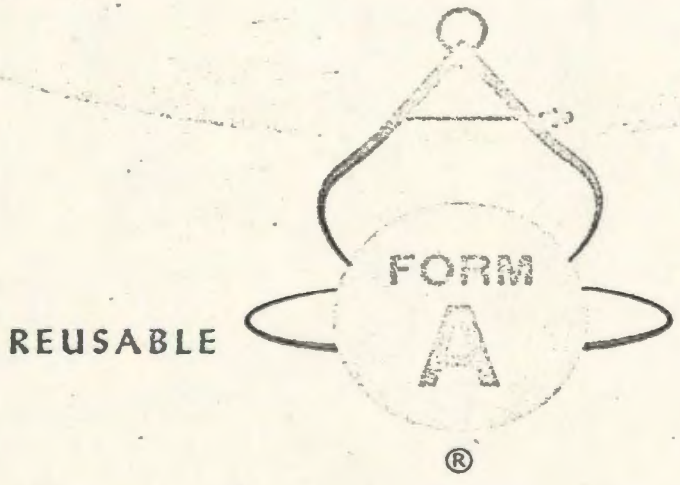
The Nelson

READING TEST

REVISED EDITION

VOCABULARY • PARAGRAPH COMPREHENSION

Grades 3–9



REUSABLE BOOKLET

®

M. J. Nelson, Ph. D., Litt. D.

DEAN EMERITUS, STATE COLLEGE OF IOWA
CEDAR FALLS, IOWA

HOUGHTON MIFFLIN COMPANY • BOSTON
NEW YORK • ATLANTA • GENEVA, ILL. • DALLAS • PALO ALTO

PART ONE • Vocabulary

DIRECTIONS TO STUDENTS

A. Do not turn this page of the test booklet until you are told to do so.

B. There are 100 questions in this part of the test but you are not expected to know the answers to all of them. Try to do as many as you can in the amount of time given.

C. During the test, do not make marks of any kind in the test booklet. You are to mark your answers on a separate answer sheet.

D. The practice exercises below will show you how to do this part of the test.

PRACTICE EXERCISES

1. John is the name of a

(1) school (2) girl (3) boy (4) river (5) flower ..... 1.

Which word tells what John is? John is the name of a boy, so **boy** *is the answer. What is the number of this word? The number of this word is* **3**. *Look at your answer sheet or answer card and you will see that for Practice Exercise 1 a heavy black mark has been made in the third space to show that answer* **3** *is best.*

2. Bread is something to

(1) wear (2) play with (3) write on (4) eat (5) sew ..... 2.

Find the row of spaces for Practice Exercise 2 and mark the space on the answer sheet or answer card that has the same number as the answer you picked. You should have marked the fourth space because answer number **4, eat,** *is best.*

E. You will have 10 minutes for this part of the test. When you have finished the first page, turn over to the next page and do as many pages as you can before you are told to stop. If you finish early, go back and check your work. Do not go on to the next part of the test.

HOUGHTON MIFFLIN COMPANY • BOSTON

The Riverside Press Cambridge

PRINTED IN U.S.A.

1. A rabbit is an
(1) apple (2) oak (3) office (4) animal (5) orange ..... 1.

2. Most dogs can
(1) fly (2) bark (3) talk (4) shoot (5) sew ..... 2.

3. A farmer raises
(1) crops (2) metals (3) oil (4) rocks (5) ink ..... 3.

4. Tiny means
(1) great (2) old (3) sorry (4) safe (5) small ..... 4.

5. Railroads are used for
(1) shade (2) travel (3) printing (4) shoes (5) respect ..... 5.

6. Twelve o'clock at night is called
(1) evening (2) noon (3) midnight (4) forenoon (5) morning ..... 6.

7. Cows feed in a
(1) saw (2) park (3) street (4) tunnel (5) pasture ..... 7.

8. Silk is something to
(1) wear (2) eat (3) sing (4) burn (5) fish ..... 8.

9. Tuesday is the name of a
(1) country (2) railroad (3) day (4) month (5) girl ..... 9.

10. A merry person is
(1) sad (2) foolish (3) pretty (4) happy (5) angry ..... 10.

11. One may lie down on a
(1) drill (2) tear (3) pencil (4) top (5) sofa ..... 11.

12. Purple is the name of a
(1) measure (2) style (3) color (4) concert (5) fern ..... 12.

13. Easter is the name of a
(1) year (2) street (3) holiday (4) month (5) painter ..... 13.

14. A mighty person is
(1) small (2) weak (3) sleepy (4) sorry (5) strong ..... 14.

15. An alley is a narrow
(1) street (2) board (3) rake (4) gate (5) state ..... 15.

16. A boss is a
(1) player (2) pearl (3) brute (4) rule (5) master ..... 16.

17. One sometimes sits on a
(1) bench (2) shade (3) file (4) belt (5) soda ..... 17.

18. A season is part of a
(1) bridge (2) dairy (3) sentence (4) surface (5) year ..... 18.

19. We take medicine when we are
(1) ill (2) hungry (3) thirsty (4) cold (5) sleepy ..... 19.

20. Many insects are called
(1) beasts (2) bugs (3) birds (4) flowers (5) buds ..... 20.

Go on to next page →

21. To allow is to
(1) eat (2) stand (3) permit (4) forget (5) sing ..... 21.

22. To frighten is to make
(1) progress (2) fearful (3) calm (4) poetry (5) humble ..... 22.

23. A hare is a small
(1) chest (2) shipment (3) animal (4) pitcher (5) base ..... 23.

24. A handsome lady is
(1) ugly (2) sad (3) large (4) lively (5) attractive ..... 24.

25. A thing that is marvelous is
(1) cheap (2) wonderful (3) dear (4) stupid (5) hard ..... 25.

26. A model is a
(1) dairy (2) strike (3) pattern (4) reply (5) chum ..... 26.

27. Fever is a form of
(1) idea (2) brace (3) grit (4) illness (5) habit ..... 27.

28. A person who likes to give to others is
(1) stingy (2) selfish (3) jealous (4) generous (5) wicked ..... 28.

29. To dread is to
(1) begin (2) remove (3) scratch (4) fear (5) fail ..... 29.

30. The traveler reached his
(1) destination (2) obligation (3) comment (4) expectation (5) memorial ..... 30.

31. An author is a
(1) speaker (2) writer (3) dancer (4) clerk (5) child ..... 31.

32. Dramas are usually presented in the
(1) laundry (2) factory (3) station (4) automobile (5) theater ..... 32.

33. A calm person is
(1) rough (2) quiet (3) jealous (4) strict (5) prompt ..... 33.

34. To complain is to find
(1) aid (2) places (3) fortune (4) refreshment (5) fault ..... 34.

35. A thing done thoroughly is done
(1) well (2) badly (3) too often (4) fast (5) easily ..... 35.

36. To proceed is to
(1) prospect (2) include (3) continue (4) destroy (5) assist ..... 36.

37. Voters elect the
(1) driver (2) officers (3) queen (4) worker (5) term ..... 37.

38. Workers usually receive
(1) launches (2) ships (3) hospitals (4) wages (5) levels ..... 38.

39. To attempt means to
(1) look out (2) address (3) iron (4) try (5) account ..... 39.

40. When a thing is accomplished, it is
(1) done (2) seen (3) just begun (4) polished (5) hot ..... 40.

Go on to next page →

41. A remedy is something that
(1) stings (2) hurts (3) bleeds (4) shoots (5) helps ..... 41.

42. A capable person is one having
(1) doubts (2) property (3) ability (4) humor (5) faults ..... 42.

43. A timid person is
(1) bold (2) shy (3) tired (4) quick (5) loud ..... 43.

44. A pamphlet is a small
(1) tree (2) ball (3) book (4) dish (5) plain ..... 44.

45. A corporation is a business
(1) guarantee (2) obligation (3) official (4) organization (5) exhibition ..... 45.

46. Irrigation promotes
(1) literature (2) agriculture (3) sentiment (4) reading (5) kindergartens ..... 46.

47. Method refers to
(1) facts (2) position (3) system (4) justice (5) volume ..... 47.

48. To omit is to
(1) leave out (2) stop (3) call to (4) ask (5) play ..... 48.

49. When you urge, you try to
(1) forget (2) appear (3) be quiet (4) clean (5) persuade ..... 49.

50. An accurate account is
(1) wrong (2) large (3) lost (4) correct (5) untrue ..... 50.

51. Temporary means that which is not
(1) excellent (2) familiar (3) similar (4) automatic (5) permanent ..... 51.

52. An abundance is
(1) a little (2) a sore (3) a dance (4) plenty (5) a few ..... 52.

53. An appropriate gift is
(1) unwelcome (2) small (3) foolish (4) unusual (5) suitable ..... 53.

54. A fortunate person is
(1) wicked (2) unhappy (3) lucky (4) hurt (5) powerful ..... 54.

55. An industrious person has
(1) sympathy (2) ambition (3) authority (4) opposition (5) benefits ..... 55.

56. To acquire is to
(1) lose (2) sweat (3) measure (4) get (5) ask ..... 56.

57. To support is to
(1) search (2) encourage (3) wander (4) receive (5) retire ..... 57.

58. An inexhaustible supply is one that cannot be
(1) burned (2) uncovered (3) used up (4) found (5) opened ..... 58.

59. Things that are in accord
(1) agree (2) disagree (3) move away (4) measure (5) applaud ..... 59.

60. An exhibition is a public
(1) privilege (2) showing (3) obligation (4) executive (5) opinion ..... 60.

Go on to next page →

To adjust means to make a
(1) profit (2) settlement (3) lecture (4) verse (5) gain ..... 61.

An associate is a
(1) chump (2) companion (3) store (4) bore (5) meeting ..... 62.

Obviously means
(1) easily (2) graciously (3) always (4) evidently (5) carelessly ..... 63.

A quart is a measure of
(1) enthusiasm (2) opportunity (3) capacity (4) temperature (5) geometry 64.

Rural refers to
(1) kindness (2) value (3) defeat (4) retail (5) country ..... 65.

Moderate means
(1) careless (2) assured (3) favored (4) limited (5) compared ..... 66.

When fears are allayed, they are
(1) calmed (2) increased (3) ignored (4) expressed (5) joined ..... 67.

A vulgar person is
(1) offensive (2) cultured (3) refined (4) polite (5) rich ..... 68.

The summit is the
(1) side (2) bottom (3) middle (4) edge (5) top ..... 69.

Efficiency means
(1) seriously (2) capability (3) studiousness (4) unable (5) care ..... 70.

Juniper is a
(1) fern (2) vine (3) tree (4) goat (5) weed ..... 71.

To falsify is to
(1) season (2) destroy (3) lie (4) plant (5) beg ..... 72.

A cowl is generally worn by a
(1) mason (2) miner (3) woman (4) boy (5) monk ..... 73.

An animated person is
(1) beastly (2) hateful (3) divorced (4) lively (5) cheap ..... 74.

To harass is to
(1) annoy (2) defame (3) locate (4) appease (5) salute ..... 75.

Idolatry involves
(1) worship (2) masonry (3) laziness (4) thieving (5) preaching ..... 76.

A rampart is a
(1) ramrod (2) tower (3) ditch (4) barrier (5) dungeon ..... 77.

To anticipate is to
(1) injure (2) help (3) expect (4) surround (5) destroy ..... 78.

An incompetent person is
(1) young (2) selfish (3) unable (4) stingy (5) boastful ..... 79.

To mangle is to
(1) mend (2) mix (3) crush (4) disdain (5) weave ..... 80.

Go on to next page →

81. An illiterate person is
(1) unwary (2) unskillful (3) unwise (4) unschooled (5) sick . . . 81.

82. An ominous cloud is
(1) high (2) fleecy (3) black (4) stationary (5) threatening . . . . . 82.

83. To sever is to
(1) detach (2) stoop (3) count (4) glean (5) be stern . . . . . 83.

84. A momentous question is
(1) temporary (2) important (3) silly (4) small (5) poor . . . . . 84.

85. An infidel rejects
(1) science (2) government (3) medicine (4) militarism (5) religion . . . . . 85.

86. Ecstasy generally refers to excessive
(1) appetite (2) grief (3) drinking (4) care (5) joy . . . . . 86.

87. To investigate means to make
(1) apology (2) inquiry (3) discount (4) sacrifice (5) remittance . . . . . 87.

88. Insignificant means
(1) faithful (2) descriptive (3) critical (4) trivial (5) informal . . . . . 88.

89. A punctilious person is one who is
(1) precise (2) puny (3) punished (4) witty (5) pugilistic . . . . . 89.

90. An indictment is a
(1) charge (2) statute (3) commission (4) warning (5) proclamation . . . . 90.

91. A man of perseverance is
(1) low-bred (2) yielding (3) antagonistic (4) trained (5) steadfast . . . . . 91.

92. A commodious box is
(1) strong (2) watertight (3) tricky (4) porous (5) roomy . . . . . 92.

93. Omnipotent means
(1) all-powerful (2) intolerant (3) forgiving (4) all-wise (5) harmonious . . . 93.

94. To insinuate is to
(1) devise (2) err (3) convict (4) hint (5) officiate . . . . . 94.

95. A spontaneous reply is one that is
(1) well considered (2) impulsive (3) fierce (4) provoking (5) erroneous . . . 95.

96. A verdant plant is
(1) wilted (2) decayed (3) green (4) injurious (5) woody . . . . . 96.

97. To consecrate is to
(1) publish (2) proclaim (3) hallow (4) free (5) pardon . . . . . 97.

98. Disepalous is a term most used in
(1) medicine (2) art (3) music (4) millinery (5) botany 98

99. A sedulous person is one who is
(1) unhappy (2) happy (3) quiet (4) alluring (5) diligent 99

100. Chimerical means
(1) fanciful (2) realistic (3) drugged (4) laughable (5) momentous 100

Stop here and wait for further instructions.

DIRECTIONS TO STUDENTS

A. Do not turn this page of the test booklet until you are told to do so.

B. There are 25 paragraphs to read in this part of the test. Read each paragraph through completely and then answer the questions below it. You may look back at the paragraph you have read, if you wish, in order to answer the questions, but do not puzzle too long over any one question. Go on to the next paragraph and keep working until you have finished or until you are told to stop.

C. The practice exercises below will show you how to do this part of the test.

PRACTICE EXERCISES

Paul was sitting in the big chair before the fire-lace. He had finished his arithmetic and language mework before supper and was now reading the per. After reading a while, he glanced down at e column of "Locals" until he came to this one:

"Joseph Grant is spending the week-end at the home of his sister, Mrs. Corson, of this city." Paul and Joseph had been great friends in the lower grades when the Grants moved to a larger city.

1. Which word tells how Paul felt after reading this news?
(1) happy (2) sad (3) tired (4) angry ..... 1.

Happy *is the answer. The number of this word is* **1**, *and you will see on your answer sheet or answer card that for Practice Exercise 1 a mark has been made in the first space. Now read the next two practice exercises and mark them on your answer sheet or card.*

2. What do you think Paul did next?
(1) telephoned to Joseph (2) went to a show (3) burned the newspaper (4) sat up all night ..... 2.

3. What time of day was it?
(1) morning (2) evening (3) midnight (4) noon ..... 3.

You should have marked answer number **1** *for Practice Exercise 2 and answer number* **2** *for Practice Exercise 3.*

D. You will have 20 minutes for this part of the test. When you have finished the first page, turn over to the next page and do as many pages as you can before you are told to stop.

A.

What fun it would be to have a dog, thought Paul, he sat on the front steps of his home. In a little hile he saw his father coming down the street with little black bundle under his arm. Paul ran to meet him. Soon he saw that the little bundle was a puppy. "Why, Father! Where did you get him?" asked Paul. "I bought him at the pet shop, and he is yours," said Father.

1. **What do you think Paul did next?**
   (1) played with his dog (2) chased the dog away (3) ran away
   (4) scolded his father ..... 1.

2. **What color was the dog?**
   (1) white (2) brown (3) black (4) tan ..... 2.

3. **What did Paul wish for?**
   (1) a father (2) a dog (3) a cat (4) a brother ..... 3.

B.

Edna was having such fun hiding from her rother, Joe. She wanted so much to get home rough the little woods before Joe could see her. ut here was Joe coming near the bush where she was hiding. Carefully she started to move to the other side, but just then a stick she stepped on broke with a loud bang.

4. **Edna and Joe were**
   (1) playing (2) fighting (3) working (4) cutting trees ..... 4.

5. **Where was Edna hiding?**
   (1) behind a tree (2) at home (3) behind a bush (4) in the top of a tree ..... 5.

6. **What do you think happened next?**
   (1) Joe walked home (2) Edna fell down (3) the bush caught fire
   (4) Joe found Edna ..... 6.

C.

At last it had come, Johnny rejoiced as he walked ome from school with his head high and his turned-, freckled nose held proudly in the air. How proud is father and mother would be, he thought, as with nds in his pockets he strode through Jensen Alley to his own back yard. He was late enough so that both Mother and Father would be at home. His monthly report cards had not been such a joy, but lately he had been working hard, and this one was perfectly splendid. Though he carried it in his back pocket, in his imagination he could see its every detail.

7. **Where was Johnny going?**
   (1) to school (2) downtown (3) home (4) visiting ..... 7.

8. **What do you think Johnny did next?**
   (1) hid his report card (2) sneaked away (3) scolded his mother
   (4) showed his report card to his parents ..... 8.

9. **How did Johnny feel?**
   (1) happy (2) sad (3) distressed (4) afraid to go home ..... 9.

Go on to next page →

D.

he hurried to his home in Ohio, George de- he did not want to take a journey through the forests again. The Indians had not been very dly, and every minute for many miles he had cted to meet one or hear an arrow singing past his ears. But nothing moved except George; no other living creature stirred. Gradually George became certain that the Indians had gone from this woodland. What a comfort it was!

10. How far did George have to go to get home?
(1) one mile (2) a few feet (3) a few yards (4) many miles ..... 10.

11. How did George feel toward the Indians?
(1) friendly (2) happy (3) afraid (4) sad ..... 11.

12. What do you think George did next?
(1) kept on going toward home (2) turned back (3) shot an Indian (4) fell down 12.

E.

rbara stopped short. Her face paled with fright e tiger came closer. She was alone in the forest too far from any cabin to make herself heard. a trembling hand she grasped the knife at her belt and stood ready. But what was that she heard in the bushes beside her? She turned to find a man hiding there, facing the tiger with a powerful gun held firmly in his right hand.

13. What do you think happened next?
(1) the tiger killed Barbara (2) the man shot the tiger (3) the tiger ran away
(4) the man shot Barbara ..... 13.

14. What word tells how Barbara felt?
(1) lonesome (2) tired (3) frightened (4) gay ..... 14.

15. Where was the man crouching?
(1) in the cabin (2) beside the tiger (3) in a tree (4) in the bushes ..... 15.

F.

rnice had seen just one horned toad, and ever seeing it, she had wanted one for a pet. "Some- " said Father, "I'll try to get one for you, but I know just when it will be." One evening er brought home a big suitcase and said: "This ase was checked in our railroad station and has there for a long time. Since no one claimed it, as auctioned along with a great many other gs. I bid a couple of dollars for it and it was sold to me." "What's in it?" asked Bernice. "I don't know," said Father, "but we'll open it after dinner." Bernice wondered so much about the suitcase that she could hardly eat her dinner. When it was finally opened, they found, among other things, a small box. Imagine their surprise when they opened it, and a small horned toad jumped out. He had lived in the box for months without food, water, or fresh air.

16. How did Bernice feel about the suitcase?
(1) sad (2) not interested (3) curious (4) angry ..... 16.

17. What do you think happened next?
(1) Bernice threw the toad away (2) the toad died (3) Father killed the toad
(4) Bernice got the toad ..... 17.

Go on to next page →

18. How many dollars did Father pay for the suitcase?
(1) one (2) two (3) three (4) four ..... 18.

G.

John was taking a week's production of cream to town to sell it. After fastening the large can in the small truck, he started out. The road was smooth and he got along very nicely until he came to a corner about halfway to town. There the rope holding the can broke, and the cream spilled on the ground.

19. What do you think happened next?
(1) John went home to tell his folks (2) John went to the creamery (3) a tire blew out
(4) the price of cream went up ..... 19.

20. What caused the loss?
(1) the road was rough (2) the rope was too weak (3) the can was too light
(4) John drove too fast ..... 20.

21. How far had he gone before losing the cream?
(1) about a mile (2) one-third of the way (3) to the first schoolhouse
(4) about halfway ..... 21.

H.

The two cars were badly smashed. The car from the north, according to eyewitnesses, was traveling seventy-five or eighty miles per hour just before the collision. The car from the east, while traveling at a moderate speed, almost passed the crossing before its rear wheels and seat were demolished by the bigger car.

22. What caused the accident?
(1) liquor (2) fast driving (3) mud (4) slippery streets ..... 22.

23. Which car was the bigger?
(1) the Cadillac (2) the car from the north (3) the car from the east
(4) the slow-moving car ..... 23.

24. What do you think happened next?
(1) the fire truck was called (2) school was dismissed (3) the small car drove on
(4) a crowd gathered ..... 24.

Go on to next page →

J.

John threw a snowball at Warren. Warren ked, but the snowball hit him on the shoulder brought a laugh from the rest of the boys. War- 's face grew red as he made a snowball and threw ith all his might at John. John dodged it, but in so doing slipped and fell into a puddle of water. In a rage John got up, picked up some snow and, as they ran, put it inside Warren's collar. Warren turned around and gave John a big shove.

25. What made John fall into the water?
(1) Warren pushed him (2) he threw so hard (3) he tried to dodge a snowball
(4) he slipped purposely ..... 25.

26. What do you think happened next?
(1) the boys walked home (2) Warren apologized to John
(3) the two boys had a fight (4) the other boys left ..... 26.

27. How did the boys feel?
(1) angry (2) friendly (3) tired (4) ashamed ..... 27.

K.

It was the afternoon of that fateful day and the p-tramp of the moving men had finally ceased. he red-lettered, yellow van was disappearing m the street, the family had eaten a hurried h, and now Phyllis was sitting in a corner of the -swept living room floor with the telephone in ap. She was saying a last tearful good-bye to one of her friends, for while she was the one who regretted least their departure for the country, she was the one to show it most. Before she had finished, Aunt Meg came hurrying in to say that they must start at once in order to reach their new home ahead of the van.

28. What do you think happened next?
(1) the family drove to the country (2) they stayed in the city (3) they called friends
(4) it stopped raining ..... 28.

29. Where did Phyllis sit?
(1) on a chair (2) on the davenport (3) on the stairs (4) on the floor ..... 29.

30. How did the family feel about leaving the city?
(1) happy (2) willing (3) sad (4) unconcerned ..... 30.

L.

e joyous family had just gathered about the ay table and the father was about to return s for the many blessings which the day had ght them, when a hesitant knock was heard. loor was opened and a small, kindly old man in accompanied by a gust of rain. When he ble to recover his voice, he related how, as a er in this part of the country, he had been at- d to their light and had deemed it best to seek shelter before night should descend upon him. While he removed his coat and dried his clothing before the huge fireplace, he brought news of many persons with whom the members of the family were acquainted, for they had themselves resided in the traveler's city not many years before. Suddenly, the father remembered that the once steaming dinner was rapidly cooling.

Go on to next page →

31. What kind of man came into the house?
(1) a robber (2) a drunkard (3) a friendly man (4) an enemy of the family ..... 31.

32. What kind of family is told about?
(1) sad (2) small (3) ugly (4) thankful ..... 32.

33. What do you think happened next?
(1) the old man was sent away (2) the rain stopped
(3) the father invited the man to dinner (4) the fire went out ..... 33.

M.

Smith, first witness for the state, testified that while he was driving at the maximum speed allowed on the narrow street the defendant passed him like a flash on the wrong side of the street. He was so surprised that he watched the car until it collided with another at a crossing two blocks ahead, and turned over. Patrolman Jones testified that when he arrived, there was trace of a broken bottle in the wrecked car and a strong odor of alcohol about the defendant who was unconscious. Perry, the driver of the other wrecked car, testified that on seeing the defendant approach, he had drawn over to the curb but could not avoid the swaying car.

34. To what does the evidence point?
(1) defendant was driving lawfully (2) defendant was driving while intoxicated
(3) defendant was slow driver (4) defendant was suffering from rheumatism ..... 34.

35. Barring other evidence, what probably resulted?
(1) the case was dismissed (2) defendant was acquitted
(3) defendant was sentenced for driving while under the influence of liquor
(4) the case was postponed ..... 35.

36. Who was driving the car wrecked by the defendant?
(1) Perry (2) Smith (3) Brown (4) Jones ..... 36.

N.

After the furious storm of the night before, the sky had cleared and the sun shone upon a fresh world. Tom and Jack, laden with dripping willow branches, hurried along through the wet meadow to the little creek in its center. Today the creek was swollen from the recent rain and it gurgled along over the rocks and nearly covered the stepping stones which had at one time projected about two feet above the water. Tom tried to cross, but as the stones were wet and smooth, he slipped and fell in. Of course the water was not deep enough to do him any harm, but as the current was swift, he called to the much excited Jack for help.

37. Which word tells how Tom felt?
(1) angry (2) happy (3) frightened (4) proud ..... 37.

38. What word describes the condition of the trees and grass?
(1) wet (2) dry (3) dead (4) yellow ..... 38.

39. What do you think Jack did next?
(1) threw a stone to Tom (2) took off his rubbers
(3) reached a willow branch to Tom and pulled him to shore
(4) pulled the boat ashore ..... 39.

Go on to next page →

O.

Shortly after take-off, he noticed that the stars were invisible. Then he realized that Stan had pulled on the stick and they were climbing to get above the thick banks of mist. Higher and higher they mounted, and when Jack could see the stars again, although all was a gray void below, he breathed more easily. He could see by the stars that they were headed right and, although he knew Stan could keep their course by instruments, he welcomed the additional guidance of the Big Dipper. After several hours the mists suddenly cleared; the sun arose in the east; and Jack's home town appeared lying directly below them.

40. When was most of the trip taken?
(1) at dawn (2) at night (3) at dusk (4) by day ..... 40.

41. What do you think they did next?
(1) landed (2) watched the sun come out (3) watched the stars
(4) jumped in a parachute ..... 41.

42. What were they doing?
(1) flying (2) sailing (3) driving a car (4) hiking ..... 42.

P.

I was sitting on the edge of the bed, loosening the heel of one of my rubber boots with the toe of the other preparatory to an early retirement, when suddenly through the darkness and stillness of the sleeping town, from the powerhouse half a mile away came a low and rising note — the great siren's whistle. Almost fascinated, I listened as the great note rose higher and more shrill and died away again. One blast meant a fire in town; two blasts, fire in the buildings at the mine; and three blasts, the most terrible of all, a disaster or trouble in the mine. Once more, after what seemed to be a long pause, the sound came again; once more rose and died away. I did not move, but there was a sudden coldness that came over me as once more, the deep note broke out on the quiet air.

43. What time of day was it?
(1) midnight (2) noon (3) evening (4) mid-afternoon ..... 43.

44. Which word best describes how the writer felt?
(1) angry (2) annoyed (3) frightened (4) relieved ..... 44.

45. What did the writer probably do?
(1) went to bed (2) rushed to the mine (3) dressed carefully and walked to the mine
(4) asked his wife if that were the noon whistle ..... 45.

Q.

Wilbur recalled the old fable that a wild beast could not stand the gaze of the human eye, and he stood at the edge of the clearing gazing steadily at the wildcat. But the snarls only grew louder. He did not like the looks of it at all. On the other hand, he had not the slightest intention of going back to camp without water. Wilbur advanced into the clearing, deciding that, whether the creature moved or not, he would now be so near that he couldn't miss her with his revolver. When he was very close, she snarled more fiercely and crouched ready to spring.

Go on to next page →

46. How did Wilbur feel?
(1) alarmed (2) happy (3) sleepy (4) peevish ..... 46.

47. What do you think happened next?
(1) Wilbur went home (2) Wilbur shot the wild creature
(3) Wilbur jumped from the boat (4) Wilbur petted the cat ..... 47.

48. What animal did Wilbur see?
(1) a lion (2) a tiger (3) a dog (4) a wildcat ..... 48.

R.

The little group of children huddled close to the stove. It was already seven o'clock, and the blizzard that had been raging outside our little one-room school had by no means spent its force, though it did seem to be subsiding somewhat. We had managed to get word to the nearest farmer and he had promised to come as soon as he cared for his stock. I dared not let any of the children start on foot for their homes. Soon the stove would be growing cold, I thought, as I put the last chunk of coal into it. What would we do then? Just as I was pondering this question, the farmer came to the door and informed me that he was ready.

49. What do you think happened next?
(1) the farmer took us home (2) the farmer drove off alone
(3) the pupils came to school (4) the snow melted ..... 49.

50. At what time did the farmer come?
(1) just before seven (2) at noon (3) at six o'clock (4) after seven o'clock ..... 50.

51. How do you think I felt before the farmer came?
(1) happy (2) tired (3) worried (4) pleased ..... 51.

S.

After their tedious tramp of more than ten miles, the boys were extremely tired. Yet, when at length they reached the cabin, they were so happy and excited that it was but a short time before the fire was built and the blanket rolls deposited in a neat row along the side of the room. At John's suggestion, they decided to set their traps before dark, as the snow was already falling and it promised to be a good night for their expedition. On their return from the woods they found the cabin lighted and an old man seated by the fire, apparently very much at home. None of the boys recognized him as they peered through the windows, but they soon decided to find out who he was.

52. What do you think happened next?
(1) the fire went out (2) the boys went home
(3) the boys entered the cabin and spoke to the man (4) the snow stopped falling 52.

53. Why did the boys come to the cabin?
(1) to fish (2) to play golf (3) to do some trapping (4) to see the snow ..... 53.

54. When did the boys get to the cabin?
(1) noon (2) midnight (3) morning (4) evening ..... 54.

Go on to next page →

T.

With extreme caution Paul slipped from his hid- place and proceeded to conceal himself in the shes behind the conspirators. Not at all fearful, spite his proximity to the two villains, either one whom would gladly have taken his life, Paul tened intently. The larger of the two men was tracting a promise from the smaller that, if the cret hiding place were revealed to him, he would t disclose the information. The smaller man took cred oath that the secret should forever remain in his possession. Then the larger man turned and showed his companion a stump about twenty yards to the right. "At the base of that stump, between the two projecting roots at the south end, lies your fortune and mine; but we must wait until tomorrow evening so that we can throw suspicion on the other man." Then they went away. Paul knew they had been talking about his uncle's treasures which had been stolen a week before!

55. What do you think happened next?
(1) Paul chased the robbers (2) Paul threw a stone at the men
(3) Paul picked nuts from the bushes and put them in his pocket
(4) Paul went home and told his uncle what he had heard ..... 55.

56. What kind of boy was Paul?
(1) brave (2) cowardly (3) unhappy (4) stupid ..... 56.

57. What was hidden under the stump?
(1) the men (2) Paul (3) a gun (4) money ..... 57.

U.

The voyages of discovery by explorers from Eng- d, Spain, and Portugal gave to each of these ntries valid claims to territory in the New World. 1524, Francis I of France resolved to have his re in these discoveries and in the benefits that ght result from them. "What!" said he to his courtiers, "shall the kings of Spain and Portugal divide all America between them, without suffering me to take a share as their brother? I would fain see the article in Adam's will that bequeaths that vast inheritance to them."

58. What word do you think best describes Francis I?
(1) generous (2) tall (3) covetous (4) old ..... 58.

59. What do you think Francis I did next?
(1) he took the next train to Spain (2) he sent explorers to America
(3) he helped Portugal get more land (4) he sold his ships to England ..... 59.

60. Over what country was Francis I the ruler?
(1) England (2) Spain (3) Portugal (4) France ..... 60.

Go on to next page →

V.

Early on that eventful Monday the 45,000 residents of the city slept peacefully and there was nothing to portend the impending disaster. Soon there came from the distance a curious singing sound that grew louder and louder, until finally the ground underfoot rose and fell in undulating waves. Even before the people could jump from their beds, the stone and brick buildings were lifted bodily, to be set down again and ground to dust. Streets and sidewalks were heaved upward or curled by the subterranean forces. Finally, with a terrific roar, an avalanche of masonry and splintered timbers crashed to the earth.

61. The disaster happened
(1) at noon (2) late at night (3) early in the morning (4) in the evening ... 61.

62. What do you think happened to the people?
(1) many were killed or injured (2) all escaped unhurt
(3) they were blown into the sea (4) they were happy about it all ... 62.

63. A good title for this story would be
(1) The Flood (2) The Tornado (3) The Earthquake (4) The Buildings ... 63.

W.

A noted entomologist relates a fascinating account of some of the activities of one type of female sand wasp. To perpetuate her kind, she constructs a little domed house of coarse sand by building a series of concentric rings, each diminishing in circumference, but with a hole left in the top. Into this edifice she deposits a species of small caterpillars which she stings into paralysis but does not kill, for these will become the food of her unborn offspring. Next she begins to seal the dome with a substance she secretes, but first she lays an egg in the dome, suspended by a thread of this same secretion. When the egg hatches, a tiny grub is born which spins a tiny thread on which it can descend to eat and also find its way back to the top.

64. What happens to the grub?
(1) It is eaten by the caterpillars (2) It remains in the little house for life
(3) It starves to death (4) It becomes a wasp ... 64.

65. A suitable title for this paragraph is:
(1) Caterpillars (2) Reproduction of the Sand Wasp (3) House Building
(4) Grubs ... 65.

66. What is the shape of the grub's first home?
(1) square (2) oblong (3) spherical (4) conical ... 66.

Go on to next page →

There can no longer be any question about the sibility of travel to the moon, although such vel will likely be far from commonplace. But at of travel to other planets? Although there are ntless planets in outer space, most of the specu- ion has concerned those which, like earth, belong the solar system. All of these, Mercury, Venus, rs, Jupiter, Saturn, Uranus, Neptune and Pluto, ve come in for some speculation but more interest been shown in Mars than in any of the others. ientists now believe that Mars, some thirty-five llion miles or more from earth, is not inhabited. wever, life for humans would probably be easier than on other planets for there is probably some plant life and the temperatures may not be too severe for, like earth, Mars turns so that all sides are warmed by the sun. Although the poles must be very cold with temperatures of 50 to 100 degrees below zero, daytime readings at the equator are probably much like ours. Because Mars is much smaller than earth, the atmosphere is very thin and oxygen very limited. Vegetation is probably limited to the types found in our deserts and water is probably very scarce so that life would be harder than on our worst deserts.

67. **A good title for this article would be**
(1) Life on the Planets (2) A Trip to Mars (3) Conditions on Mars
(4) The Solar System ..... **67.**

68. **Why does the writer think that life for humans might be easier on Mars than on other planets?**
(1) Mars is closer to earth (2) Mars is larger than earth
(3) Mars is smaller than earth (4) the climate is more like ours ..... **68.**

69. **When does the writer expect a trip to Mars will be made?**
(1) in a year (2) very soon (3) never (4) he doesn't say ..... **69.**

Y.

"To land King Robert lightly sprung,
And thrice aloud his bugle rung
With note prolonged and varied strain
Till bold Ben-Ghoil replied again.
Good Douglas then and De la Haye
Had in a glen a hart at bay,
And Lennox cheered the laggard hounds,
When waked that horn the greenwood bounds.
'It is the foe!' cried all, who came
In breathless haste with eyes of flame —
'It is the foe! — Each valiant lord
Fling by his bow and grasp his sword!' "

70. **What were the men doing when the bugle blew?**
(1) fighting (2) hunting (3) resting (4) sleeping ..... **70.**

71. **With which weapons did they fight?**
(1) guns (2) cannons (3) spears (4) swords ..... **71.**

72. **What do you think happened next?**
(1) the men went home (2) the hounds were killed (3) the airplane crashed
(4) the men gathered for battle ..... **72.**

Go on to next page →

Durovitch had a strange sort of eccentricity: he was disinclined to recapitulate any incident he had formerly related. If asked to do so, he would interpolate so as to make the original impossible of recognition. Yet so garrulous was he that on more than one occasion did he take so little cognizance of the words which flowed over his tongue in his efforts to regale his select coterie, that his hearers were able to worm from him essential repetitions. Such was the case one bitter winter evening when, recovering from an inordinate carousal, the village jokesmith was desirous of hearing a tale which Durovitch, himself a bit befuddled, had once produced out of his copious stock. Durovitch fixated the most timid of his hearers with that ghoulish gaze which one who would be regaled must learn to forbear, and the assembled company knew that the jokesmith had met with success.

73. What kind of man was Durovitch?
(1) timid (2) quarrelsome (3) wicked (4) talkative ..... **73.**

74. What kind of evening was it?
(1) sultry (2) cold (3) warm (4) rainy ..... **74.**

75. What do you think happened next?
(1) Durovitch went home (2) Durovitch told a brand new story
(3) the jokesmith made everyone laugh
(4) Durovitch repeated a story he had told before ..... **75.**

End of test.

Selection for Paragraph Test W, page 17, was adapted from "The Hidden Heart of Nature" by E. L. Grant Wilson, by permission of THE SATURDAY EVENING POST.

Selection for Paragraph Test X, page 18, was adapted from PLANET EARTH *by Rose Wyler, by permission of the publisher, Henry Schuman, Inc.*

(Do not write in this booklet. The blank space below is for school use only.)

147

APPENDIX H

THE LORGE-THORNDIKE H M TESTS INTELLIGENCE TESTS

AV 4-6

RE-USABLE EDITION

DIRECTIONS: This booklet contains four short tests which will give you a chance to show what you know and how well you think. You are to mark your answers to all the questions in this booklet on the separate answer sheet which has been given you. The questions are followed by five choices, only one of which is the right answer.

Look at the first sample question below. It is correctly marked on the answer sheet. Study it carefully to see for yourself just how you are to mark your answers.

1. Choose the word which has the same meaning, or most nearly the same meaning, as the word in dark type at the beginning of the line.

dog **A** afraid **B** song **C** animal **D** large **E** fly

Now look at the next two samples. Choose the right answer and then, on the answer sheet, make a heavy black pencil mark in the dotted answer space that has the same letter as the answer you picked.

2. In the group of choices lettered F to K, find the word that will make the best, the truest, and the most sensible complete sentence.

The sun always rises in the ———.

F east **G** wind **H** night **J** rain **K** water

3. Choose the right answer to this problem and mark the answer space.

A boy bought a pencil for 10 cents and some paper for 10 cents. How much did he spend?

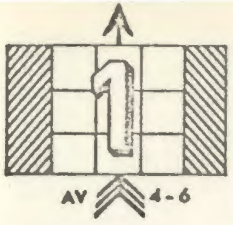
L 5 cents **M** 10 cents **N** 15 cents **P** 20 cents **Q** none of these

If you wish to change an answer, erase your mark completely, and then make another mark in the right answer space.

You may find some of the questions very easy and some of them rather hard. Try to answer every question, but do not spend too much time on those that you find very hard. Do those that you can, and then, if you still have time left, go back and do those that you skipped. You are not expected to be able to answer all the questions correctly. Always do your very best.

At the beginning of each short test there are directions that tell you what to do. Wait until you are told to begin before turning the page.

3 AV



One word has been left out of each sentence on these two pages. Choose the word that will make the best, the truest, and the most sensible complete sentence. Look at sample sentence 0.

0. Hot weather comes in the ———.

A fall B night C summer D winter E snow

The best answer is summer. The letter before summer is C, so you should make a heavy black pencil mark in the C answer space for sentence 0.

Now look at sentence 00.

00. ——— bark at cats.

F Cows G Mice H Cats J Hens K Dogs

The best answer is Dogs, so you should make a heavy black pencil mark in the K answer space for sentence 00.

Do all the sentences on these two pages in the same way. Try every sentence.

---

1. Boys will become ———.

A infants B little C intelligent D stupid E men

2. We see ——— only at night.

F children G plants H stars J houses K trees

3. Fred was six years old. There were six ——— on his birthday cake.

L candles M boys N girls P parties Q children

4. Not every cloud gives ———.

R weather S shade T sky U climate V rain

5. Coal is ———; snow is white.

A blue B white C red D green E black

6. In the spring the buds form on the branches of the ———.

F trees G rivers H bugs J leaves K animals

7. The ——— must bend when the wind blows upon it.

L ground M house N path P grass Q sky

8. There is an old ———, "An apple a day keeps the doctor away."

R talk S saying T reader U book V man

9. Nothing out of its place is good and nothing in its place is ———.

A there B bad C right D shelved E simple

10. The ragged ——— may prove a good horse.

F puppy G child H calf J lamb K colt

---

11. I know of no way of judging the ——— but by the past.
L former M future N priority P morn Q decline

12. Caterpillars spin ——— for themselves in the fall.
R webs S around T moths U cocoons V butterflies

13. How far the little ——— throws its beams!
A candle B cake C sky D puppy E night

14. When a dove begins to associate with crows, its feathers remain ——— but its heart grows black.
F black G white H dirty J spread K good

15. Good company on a journey makes the ——— seem shorter.
L feast M way N joy P work Q care

16. How the ——— roses flush up in the cheeks!
R white S pretty T small U yellow V red

17. The important thing is not so much that every child should be taught, as that every child should be given the wish to ———.
A learn B play C hope D reject E teach

18. The person who ——— another must make good the damages.
F reforms G improves H instructs J injures K delights

19. It must be ———: I've done it from my youth.
L right M wrong N factual P rude Q kind

20. Cause and effect, means and ends, seed and ——— cannot be severed.
R caution S thought T fruit U science V philosophy

21. No matter how harsh advice may be, it ——— no one.
A injures B helps C pays D delights E respects

22. The only stable state is the one in which all men are ——— before the law.
F just G right H equal J guiltless K natural

23. It is ——— to be generous with other people's property.
L desirable M necessary N good P important Q easy

24. Reason is founded on the ——— of our senses.
R love S confusions T abuse U evidences V brutality

25. Think long when you may ——— only once.
A abstain B live C die D decide E eat

Stop! Wait until you are told to go ahead to Test 2.

Look at sample question 0.

0. rose daisy violet

A red B garden C sweet D grow E lily

The words in dark type in question 0 are the names of flowers. On the next line only **lily** is the name of a flower. The letter before **lily** is E, so you should make a heavy black pencil mark in the E answer space for question 0.

Now look at question 00. Think in what way the words in dark type go together. Then find the word on the line below that belongs with them.

00. go run walk move

F think G dream H march J sing K seem

The right answer is **march**. You should make a heavy black pencil mark in the H answer space for question 00.

Do all the questions on these two pages in the same way. Try every question.

---

1. horse cow lamb

A farm B forest C canary D pig E beast

2. Ed Dick Pete

F Benjamin G Ted H Harold J Melvin K Arthur

3. dish cup glass

L fork M food N plate P drink Q meal

4. bean carrot spinach

R orange S pea T seed U vegetable V lunch

5. Sarah Clara Joan

A Ben B Freddy C Louise D Sam E Ronald

6. violet rose poppy

F cherry G apple H garden J tulip K hemlock

7. pencil chalk crayon

L paper M letter N easel P pen Q paint

8. hand chin eye toe

R glove S shoe T hair U touch V forehead

9. pot kettle broiler skillet

A sink B stove C tumbler D tray E pan

10. corn rye wheat barley

F rice G carrots H cucumber J bean K tomato

---

11. bird kite airplane butterfly
L insect M bat N animal P ship Q train

12. book magazine letter
R newspaper S movie T radio U lecture V read

13. chess checkers dominoes lotto
A pool B lacrosse C bingo D croquet E cricket

14. star moon planet
F sky G solar H planetarium J telescope K sun

15. intelligent keen acute sharp
L prudent M poised N rational P sophisticated Q bright

16. pumps sneakers Oxfords sandals
R skis S hose T gloves U moccasins V skates

17. volunteer neophyte inexperienced beginner
A contract B amateur C unimportant D common E profession

18. trousers breeches knickers pants
F shorts G skirts H kilts J coats K mackinaws

19. ignition motor generator clutch
L gasoline M sedan N garage P chauffeur Q brake

20. pepper clove cinnamon nutmeg
R onion S salt T beet U relish V soup

21. brush mop vacuum cleaner carpet sweeper
A rag B washing machine C towel D broom E cleaner

22. crest insignia escutcheon shield
F favor G genealogy H uniform J steed K coat of arms

23. cloak mantle greatcoat ulster
L jersey M dress N shawl P overcoat Q gabardine

24. captain general major lieutenant
R ensign S admiral T colonel U sergeant V corporal

25. Jupiter Juno Minerva Venus
A Diana B Thor C Odin D Balder E Satyr

Stop! Wait until you are told to go ahead to Test 3.

Look at sample problem 0.

0. If candy costs a cent a piece, how much will nine pieces cost?

A 1¢ B 7¢ C 8¢ D 9¢ E none of these

The right answer is 9¢. The letter before it is D, so you should make a heavy black pencil mark in the D answer space for problem 0.

Now look at problem 00.

00. Mrs. Jones bought a pound of potatoes for 10¢ and a pound of spinach for 15¢. How much did she spend?

F 5¢ G 10¢ H 15¢ J 20¢ K none of these

The right answer is 25¢. The answers at F, G, H, and J are wrong. You should make a heavy black pencil mark in the K answer space because "none of these" is the best answer for problem 00.

Do all the problems on these two pages in the same way. Try every problem.

---

1. Jim bought a candy bar for 5 cents and a piece of gum for 2 cents. How much did he pay for both?

A 3¢ B 7¢ C 10¢ D 52¢ E none of these

2. Helen bought a pad for 5 cents, some candy for 12 cents, and a pen for 6 cents. How much did she spend altogether?

F 21¢ G 22¢ H 23¢ J 33¢ K none of these

3. A pad costs 5 cents. How much will 4 pads cost?

L 9¢ M 16¢ N 18¢ P 25¢ Q none of these

4. John bought some peanuts for 10 cents. He gave the man 25 cents. How much change should he get back?

R 35¢ S 25¢ T 20¢ U 15¢ V None of these

5. Dick wants to buy some 5¢ pencils. How many can he buy for 25 cents?

A 5 B 20 C 25 D 30 E none of these

6. Jane had 36 cookies. She gave away 21 of them. How many did she have left?

F 14 G 15 H 17 J 57 K none of these

7. A classroom has 5 rows of seats with 7 seats in each row. How many children can be seated in the room?

L 2 M 12 N 35 P 57 Q none of these

DO NOT WRITE IN THIS BOOKLET. USE OTHER PAPER FOR ANY FIGURING YOU NEED TO DO.

---

8. Mary bought a comic book for 10 cents, some gum for 5 cents and a candy bar for 5 cents. How many cents did she spend in all?

R 15¢ S 20¢ T 25¢ U 50¢ V none of these

9. There are 20 children in a class. Each gives the teacher 10 cents for milk. How much does the teacher get in all?

A 10¢ B 30¢ C $1.00 D $2.00 E none of these

10. It takes Mary 20 minutes to walk to school. Sue can walk to school in half the time it takes Mary. How many minutes does it take Sue to walk to school?

F 10 G 20 H 30 J 40 K none of these

11. A hostess needs enough ice cream to serve 30 persons. How many quarts should she order if one quart will serve 6 persons?

L 6 M 24 N 36 P 180 Q none of these

12. Every time Mr. Dwyer draws a check, his bank charges him 5¢. How much does the bank charge him during one month for 23 checks?

R $.25 S $.28 T $1.05 U $1.15 V none of these

13. There are 321 children in a school. One day 104 went on a trip. How many children were left in school?

A 425 B 227 C 217 D 207 E none of these

14. Mr. Ronald told Peggy that he would give her $1200 to pay for her first year at college. If he gave her $480 to start with and the rest in eight monthly payments, how much was she to receive each month?

F $80 G $90 H 133\frac{1}{3}$ J $720 K none of these

15. Sam gets 20% of the price for each magazine subscription that he sells. He wants to earn $50 during the summer. What is the value of the subscriptions he will have to sell?

L $10 M $40 N $50 P $200 Q none of these

DO NOT WRITE IN THIS BOOKLET. USE OTHER PAPER FOR ANY FIGURING YOU NEED TO DO.

Stop! Wait until you are told to go ahead to Test 4.

For the questions on this page, you are to choose the word which has the same meaning, or most nearly the same meaning, as the word in dark type at the beginning of the line. Look at sample question 0.

0. loud A quick B noisy C hard D heavy E weak

The best answer is **noisy**. The letter before **noisy** is B, so you should make a heavy black pencil mark in the B answer space for question 0.

Do all the questions on this page in the same way. Try every question.

1. land	A ground	B town	C roof	D river	E grass
2. toss	F drink	G add	H sum up	J lower	K throw
3. elephant	L bird	M zoo	N snake	P animal	Q fish
4. last	R hope	S shoe	T back	U end	V king
5. enter	A place	B play	C try out	D leave	E go in
6. beside	F lay siege	G over	H how	J close to	K few
7. single	L one	M many	N some	P all	Q few
8. carpenter	R ruin	S red carpet	T building	U clam	V workman
9. torture	A toper	B total	C law	D labyrinth	E torment
10. mix	F combine	G skip	H reach	J color	K lose
11. fasten	L fix	M divide	N feed	P loosen	Q grease
12. whistle	R small thing	S song	T bird	U serpent	V shrill sound
13. dew	A storm	B moisture	C drop	D honey	E fog
14. sob	F prejudice	G solemn	H sigh	J joy	K kind
15. adjust	L parole	M account	N disturb	P regulate	Q render
16. heavily	R lightly	S solidly	T feverish	U goodly	V weakly
17. grip	A grate	B grow	C gyrate	D grasp	E grin
18. recipe	F catch	G share	H formula	J narrative	K payment
19. detail	L sale	M insurance	N item	P bookkeeper	Q poison
20. hairy	R light	S beguiled	T divested	U shaggy	V unique
21. exclamation	A supplication	B outcry	C uplift	D calamity	E persecution
22. hunger	F food	G famine	H frustration	J fake	K force
23. patent	L officer	M client	N license	P head	Q sheen
24. agile	R nervous	S antiseptic	T nimble	U pugnacious	V terrified
25. tangible	A ghostly	B substantial	C pungent	D obstructive	E twisting

Turn over your test booklet and wait for further instructions.

IJ-B-743210/69876

APPENDIX I

P.O. Box 81
Arts and Education Building
Memorial University of Nfld.
St. John's, Newfoundland

Dear Parent or Guardian:

As part of the requirements for our M. Ed. programs in Educational Administration we are conducting studies in the fields of reading , language, and arithmetic among Grade Six pupils in Trinity North and Trinity South.

Your cooperation in completing this parent questionnaire and returning it to your child's teacher will be greatly appreciated.

Yours truly,

.....
R. Noel

.....
H.A.Pollard

.....
J.S. Ralph

PARENT QUESTIONNAIRE

1. TO THE MOTHER (OR GUARDIAN): How many years of schooling do you have? Circle the number showing the highest grade you have completed.
   1 2 3 4 5 6 7 8 9 10 11 12
   University or Trade School, and other training beyond high school 1 2 3 4 5 6 7 8 years.

2. TO THE FATHER (OR GUARDIAN): What do you usually do for a living? For example: a brakeman with the C.N.R., a fishermen, a captain, drives a taxi, teacher school, salesman for a life insurance company, etc. Give as many details as you can._____

3 How many children do you now have who are 18 years of age or under and living at home?_____

Pupil's Name_____

APPENDIX J

TEACHER QUESTIONNAIRE

1. Teacher's Name _____

2. Name of School _____

3. School Address _____

4. What is your Teaching Licence/Grade?

   _____ (1) Licence; _____ (2) Grade

5. How many pupils are enrolled in Grade Six in your classroom? _____

6. What is the age of the school building in which you teach? _____

7. Please list below the names of your Grade Six pupils, and after each name indicate the number of days he (or she) was absent between September 6, 1967 and April 30, 1968.

Pupils' Names	Days Absent	Pupils' Names	Days Absent

APPENDIX K

SCHEDULE FOR BATTERIES OF TESTS ADMINISTERED TO PUPIL SAMPLE

Time	Tests	Administration Time
Morning 9:30 a.m. to 12.30 p.m.	CANADIAN TESTS OF BASIC SKILLS	
	Language Tests:	
	L-1 Spelling	12 minutes
	L-2 Capitalization	15 "
	L-3 Punctuation	20 "
	L-4 Language Usuage	20 "
	Mathematics Tests:	
	M-1 Mathematics Concepts	30 "
	M-2 Mathematics Problem Solving	30 "
Afternoon 2:00 p.m. to 4:00 p.m.	THE NELSON READING TEST 1962 REVISED EDITION	
	Vocabulary	10 minutes
	Paragraph Comprehension	20 minutes
	LORGE-THORNDIKE INTELLIGENCE TESTS	
	Test 1	9 minutes
	Test 2	8 "
	Test 3	10 "
	Test 4	7 "

APPENDIX L

SCHOOLS FROM WHICH PUPILS TESTED

Number, Place and School	Enrollment	Test Centre Number	Researcher	Transport and Distance	Dates of Testing May, 1968	Number Tested
1. Bellevue, R.C.	19	1	Pollard		6, 7	11 (18)
2. Blaketown, Ang.	4	2	Ralph		2, 3	4
3. Bonaventure, Ang.	9	3	"		15, 16	9
4. Burgoyne's Cove, Ang.	8	4	"		14, 15	8
5. Britannia, U.C.	2	5	"		10, 13	2
6. Brownsdale, U.C.	5	6	Noel		1, 10	5
7. Butter Cove, Ang.	6	26	"	Car, 2mi.	8, 9	6
8. Catalina, Ang.	29	8	Pollard		14, 15	29
9. Catalina, U.C.	15	8	Noel		14, 15	15
10. Catalina, R.C.	5	8	Noel		14, 15	5
11. Cavendish, U.C.	10	28	"	Bus, 7mi.	2, 3	10
12. Champney's East, Ang.	4	59	Pollard	Bus, 3mi.	15, 16	2
13. Chance Cove, Ang.-S.A.	18	13	"		6, 7	17 (18)
14. Chapel Arm, Ang.	15	14	Noel		6, 7	15
15. Chapel Arm, R.C.	11	15	"		6, 7	8
16. Clarenville, S.A.	15	16	Ralph		8, 9	15
17. Clarenville, U.C.	57	17	"		8, 9	55
18. Deep Bight, U.C.	3	16	"	Bus, 5mi.	8, 9	3
19. Dildo, S.A.	23	19	Pollard		2, 3	23
20. Dunfield, Ang.	4	70	Noel	Car, 4mi.	15, 16	3 (4)
21. Dunfield, U.C.	4	70	"	Car, 4mi.	15, 16	4
22. Elliot's Cove, U.C.	2	35	Ralph	Car, 15mi.	10, 13	2
23. Elliston, U.C.	14	23	Pollard		13, 14	14
24. English Harbour, Ang.	2	59	"	Bus, 4mi.	15, 16	2
25. George's Brook, U.C.	3	62	"	Car, 6mi.	8, 9	3
26. Gooseberry Cove, Ang.	5	26	Noel		8, 9	5
27. Green's Harbour, S.A.	3	28	"		2, 3	3
28. Green's Harbour, U.C.	21	28	"		2, 3	21
29. Hant's Harbour, Amalg.	12	29	"		1, 10	11 (12)
30. Harcourt, U.C.	8	4	Ralph	Car, 10mi.	14, 15	8

31.	Hatchet Cove, Ang.	2	36	Pollard	Car, 8mi.	8,	9	2	
32.	Heart's Content, Ang.	10	32	"		1,	10	10	
33.	Heart's Desire, R.C.	13	33	Ralph		1,	21	13	
34.	Hickman's Harbour, S.A.	3	35	"	Car, 1mi.	10,	13	3	
35.	Hickman's Harbour, U.C.	7	35	"		10,	13	7	
36.	Hillview, U.C.	7	36	Pollard		8,	9	7	
37.	Hodge's Cove, Ang.-U.C.	15	37	Ralph		6,	7	15	
38.	Hopeall, U.C.	6	28	Noel	Bus, 4mi.	2,	3	6	
39.	Islington, Ang.	23	39	Ralph		1,	3	21	
40.	Lady Cove, U.C.	2	35	"	Car, 10mi.	10,	13	2	
41.	Little Cataline, U.C.	34	41	Noel		13,	14	32	
42.	Little Heart's Ease,S.A.	15	42	"		8,	9	15	
43.	Long Beach, Ang.-U.C.	2	69	Ralph	Car, 4mi.	6,	7	2	
44.	Long Cove, U.C.	22	44	Noel		6,	7	20	
45.	Lower Lance Cove, S.A.	6	5	Ralph		10,	13	6	
46.	Markland, Ang.	5	73	Ralph	Car. 6mi.	2,	3	5	
47.	Markland, U.C.	9	73	"	Car, 4mi.	2,	3	8	
48.	Melrose, R.C.	14	8	Noel	Bus, 3mi.	14,	15	12	
49.	Milton, U.C.	1	62	Pollard	Car, 5mi.	8,	9	1	
50.	New Chelsea, Pent.	2	6	Noel	Bus, 4mi.	1,	10	2	
51.	New Chelsea, U.C.	4	6	Noel	Bus, 4mi.	1,	10	4	
52.	New Harbour, Ang.	23	52	Pollard		2,	3	21	(23)
53.	New Perlican, Ang.	11	32	"	Car. 3mi.	1,	10	11	
54.	New Melbourne, U.C.	5	29	Noel	Car, 3mi.	1,	10	4	
55.	Norman's Cove, U.C.	25	55	"		6,	7	22	(25)5
56.	North West Brook, Ang.	1	36	Pollard	Taxi 3mi.	8,	9	1	
57.	North West Brook, U.C.	7	36	"	Taxi 3mi.	8,	9	7	
58.	Old Shop, Ang.	6	2	Ralph	Car, 7mi.	2,	3	6	
59.	Port Rexton, Ang.	14	59	Pollard		15,	16	10	(14)
60.	Port Union, U.C.	10	8	Noel	Car, 2mi.	14,	15	10	
61.	Petley, Ang.	7	5	Ralph	Car, 6mi.	10,	13	7	
62.	Shoal Harbour, U.C.	31	62	Pollard		8,	9	31	
63.	Sibley's Cove, U.C.	6	6	Noel	Car, 2mi.	1,	10	6	
64.	South Dildo, S.A.	2	2	Ralph	Car, 4mi.	2,	3	2	

65.	South Dildo, U.C.	3	2	Ralph	Car. 4mi,	2,	3	3	
66.	South Port, U.C.	3	26	Noel	Car, 2mi.	8,	9	3	
67.	St. Jones Within, U.C.	3	36	Pollard	Car, 12mi.	8,	9	3	
68.	Sunnyside, Ang.	7	69	Ralph		6,	7	7	
69.	Sunnyside, U.C.	11	69	Ralph		6,	7	10	(11)
70.	Trinity, Ang.	10	70	Noel		15,	16	9	
71.	Trinity East, Ang.	3	59	Pollard	Car, 2mi.	15,	16	3	
72.	Weybridge, U.C.	1	35	Ralph	Car, 13mi.	10,	13	1	
73.	Whitbourne, Ang.	27	73	"		2,	3	22	(24)
74.	Whitbourne, R.C.	7	73	"		2,	3	7	
75.	Whiteway, U.C.	5	28	Noel	Bus, 3mi.	2	3	5	
76.	Winterton, S.A.	28	76	Pollard		1,	10	25	(27
TOTAL		791						746	770

*Note:- The test centre number is the same as the number for the school unless the pupils transported to another school to be tested. If they were transported the test centre number refers to the number for the school to which they were transported.

The total 791 was the number of pupils enrolled as of April 30, 1968; the total 746 is the number of pupils who wrote the reading tests; and the number 770 refers to the total pupils tested for all three studies done on this sample. The number in brackets is given only when the total number of pupils tested for all three studies was different from the number tested for reading.

Under transport and distance car refers to the car belonging to the researcher doing the testing, while the bus and taxi were hired vehicles.

APPENDIX M

BLISHEN OCCUPATIONAL CLASS SCALE

An Occupational Class Scale (481)

APPENDIX

Table 1 - Occupations Ranked and Grouped According to Combined Standard Scores for Income and Years of Schooling, by Sex, Canada, 1951

Occupation	Sex	Score[b]
Class 1		
Judges	M	90.0
Dentists	M	82.5
Physicians and Surgeons	M	81.2
Lawyers	M	78.8
Engineers, chemical	M	77.8
Actuaries	M	77.6
Engineers, mining	M	77.4
Engineers, electrical	M	75.2
Engineers, civil	M	75.0
Architects	M	73.2
Class 2		
Statisticians	F	72.9
Engineers, mechanical	M	72.6
Professors	M	72.0
Stock and bond brokers	M	70.9
Veterinarians	M	69.8
Business service officers	M	69.5
Statisticians	M	68.8
Mining Managers	M	67.9
Finance Managers	M	67.7
Osteopaths and chiropractors	M	67.3
Dietitians	F	67.0
Professors	F	66.7
Chemists and metallurgists	M	65.8
Officers, armed forces	M	65.1
Air pilots	M	65.0
Chemists and metallurgists	F	64.8
Agricultural professionals	M	64.8
Electricity, gas and water officials	M	64.7
Other professions, Hockey players	M	64.0

Occupation	Sex	Score[b]
Construction managers	M	63.8
Wholesale trade managers	M	63.5
Librarians	F	63.4
Authors, editors and journalists	M	63.4
Manufacturing managers	M	63.0
Community service workers	M	62.4
Social welfare workers	F	62.2
Osteopaths and chiropractors	F	62.2
School teachers	M	62.2
Librarians	M	62.0
Accountants and auditors	M	61.8
Authors, editors and journalists	F	61.4
Clergymen	M	61.0
Designers, clothing	M	60.6
Gov't.service officials	M	60.6
Transportation managers	M	60.1
Farmers	F	59.4
Community service workers	F	59.1
Dispatchers, train	M	58.5
Designers, cloth	F	58.2
Insurance agents	M	58.2
Foremen, communication	M	58.1
Advertising agents	M	58.0
Managers N.E.S.[c]	M	57.7
School teachers	F	57.6
Artists and teachers of art	M	57.6
Nurses, graduate	F	57.4
Real estate agents and dealers	M	57.0
Social welfare workers	M	57.0
Retail trade managers	M	57.0
Class 3		
Actors, models	F	56.9
Commercial travellers	M	56.7
Advertising agents	F	56.6
Forestry managers	M	56.5
Artists, commercial	F	56.4
Radio announcers	M	56.4
Laboratory technicians N.E.S.[c]	F	56.0
Artists, commercial	M	56.0
Draughtsmen	M	56.0
Brokers, agents and appraisers	M	56.0
Inspectors, communication	M	55.0
Artists and teachers of art	F	55.0

Occupation	Sex	Score[b]
Surveyors	M	55.0
Recreation service officers	M	54.8
Purchasing agents	M	54.8
Agents, ticket station	M	54.3
Laboratory technicians N.E.S.[c]	M	54.2
Stenographers and typists	F	54.1
Conductors, railway	M	54.1
Radio operators	M	54.0
Locomotive engineers	M	54.0
Photo-engravers	M	54.0
Music teachers	M	53.7
Teachers N.E.S.[c]	F	53.6
Office appliance operators	F	53.4
Teachers N.E.S.[c]	M	53.4
Retail trade managers	F	53.3
Telegraph operators	F	52.9
Foremen, mining	M	52.8
Window-decorators	F	52.3
Nurses, graduate	M	52.2
Actors	M	52.1
Stenographers	M	52.0
Class 4		
Book-keepers and cashiers	F	51.9
Forewomen, communication	F	51.8
Foremen, manufacturing	M	51.8
Photographers	M	51.8
Inspectors, construction	M	51.7
Window-decorators	M	51.6
Telegraph operators	M	51.6
Petroleum refiners	M	51.6
Toolmakers	M	51.6
Engravers, except photo-engravers	M	51.4
Undertakers	M	51.3
Office clerks	F	51.2
Locomotive firemen	M	51.2
Book-keepers and cashiers	M	51.2
Brakemen, railway	M	51.1
Power station operators	M	51.0
Office appliance operators	M	51.0
Doctor, dentist attendants	F	50.8
Motion picture projectionists	M	50.8
Radio repairmen	M	50.8
Captains, mates, pilots	M	50.7

Occupation	Sex	Score[b]
Foremen, transportation	M	50.7
Foremen, commercial	M	50.6
Personal service officers	M	50.5
Class 5		
Patternmakers	M	50.4
Compositors	M	50.4
Inspectors, metal	M	50.4
Paper-makers	M	50.4
Photographers	F	50.2
Policemen	M	50.2
Office clerks	M	50.2
Mechanics, airplane	M	50.1
Inspectors, metal products	F	50.0
Music teachers	F	50.0
Firemen, fire department	M	49.8
Pressmen and plate printers	M	49.8
Telephone operators	F	49.6
Electricians	M	49.6
Machinists, metal	M	49.6
Linemen and servicemen	M	49.4
Engineering officers (on ships)	M	49.4
Baggagemen	M	49.4
Transportation Inspectors	M	49.4
Rolling millmen	M	49.4
Auctioneers	M	49.3
Inspectors and graders	M	49.2
Farmers	M	49.2
Photographic occupations N.E.S.[c]	M	49.2
Collectors	M	49.1
Dental mechanics	M	49.1
Sulphite cookers	M	49.0
Wire drawers	M	46.9
Other ranks, armed forces	M,F	46.8
Electroplaters	M	46.8
Plumbers	M	46.8
Motormen	M	46.7
Quarriers	M	46.6
Machine operators, metal	M	46.5
Paint makers	M	46.4
Filers	M	46.4
Upholsterers	M	46.3
Knitters	M	46.3
Wood Inspectors	M	46.3

Occupation	Sex	Score[b]
Barbers	F	46.2
Milliners	F	46.2
Tobacco products workers	F	46.2
Furnacemen	M	46.2
Furriers	M	46.2
Brothers (religion)	M	46.1
Paper box makers	M	46.1
Other bookbinding workers N.E.S.[c]	F	46.0
Coremakers	M	46.0
Vulcanizers	M	46.0
Liquor and beverage workers	M	46.0
Postmen	M	45.9
Meat canners	F	45.9
Other upholstering workers N.E.S.[c]	F	45.8
Bookbinders	F	45.8
Transportation, storage, communication workers	F	45.8
Polishers, metal	M	45.8
Furriers	F	45.6
Structural Iron workers	M	45.6
Mechanics, motor	M	45.6
Textile Inspectors	M	45.6
Cabinet and furniture makers	M	45.5
Loom fixers	M	45.5
Weavers, textile	F	45.4
Butchers	M	45.4
Miners	M	45.4
Assemblers, electrical equipment	F	48.9
Operators, electric street railway	M	48.8
Stationary engineers	M	48.7
Bookbinders	M	48.6
Tire and tube builders	F	48.4
Canvassers	M	48.2
Telephone operators	M	48.2
Switchmen and signalmen	M	48.2
Opticians	M	48.2
Jewellers and watchmakers	M	48.2
Personal service workers	F	48.1
Assemblers, electrical equipment	M	48.1
Tire and tube builders	M	48.1
Millwrights (repairs machinery in mills)	M	48.0
Religious workers N.E.S.[c]	M	48.0
Fitters, metal	F	47.9
Milliners	M	47.8
Construction foremen	M	47.7

Occupation	Sex	Score[b]
Opticians	F	47.6
Bus drivers, taxi	M	47.6
Heat treaters	M	47.6
Religious workers N.E.S.[c]	F	47.6
Photographic workers N.E.S.[c]	F	47.4
Machine operators, metal	F	47.4
Boilermakers	M	47.3
Jewellers and watchmakers	F	47.2
Other bookbinding workers N.E.S.[c]	M	47.2
Sales clerks	M	47.2
Hoistmen, cranemen	M	47.2
Welders, general trade	M	47.2
Mechanics N.E.S.[c]	M	47.2
Mechanics, railroad	M	47.2
Fitters, metal	M	47.2
Cutters, textile goods	M	47.2
Millmen	M	47.2
Wire drawers	F	47.1
Core makers	F	47.1
Riggers	M	47.1
Sheetmetal workers	M	47.1
Shipping clerks	M	47.0
Logging foremen	M	45.4
Labellers	M	45.3
Nurses, in training	F	45.2
Meat canners	M	45.2
Farm managers	M	45.2
Plasterers	M	45.2
Textile Inspectors	M	45.1
Other pulp and paper workers	F	45.1
Class 6		
Winders and warpers	F	45.0
Carders and dfawing frame workers	F	45.0
Sales clerks	F	45.0
Moulders, metal	M	45.0
Nurses, practical	M	45.0
Cutters, textile goods	F	44.9
Elevator tenders	F	44.8
Tailoresses	F	44.8
Textile Inspectors	F	44.8
Potmen	M	44.8
Timbermen	M	44.7
Prospectors	M	44.7

Occupation	Sex	Score[b]
Oilers, power plant	M	44.7
Liquor and beverage workers	F	44.6
Paper box makers	F	44.6
Kiln burners	M	44.6
Brick and stone masons	M	44.6
Construction machine operators	M	44.5
Canvassers	F	44.4
Service station attendants	M	44.4
Painters and decorators	M	44.4
Hat and cap makers	M	44.4
Bleachers and dyers	M	44.4
Spinners and twisters	F	44.3
Rubber shoe makers	F	44.2
Porters	M	44.2
Tobacco products workers	M	44.2
Millers	M	44.2
Nurses, practical	F	44.1
Finishers, textile	F	44.0
Blacksmiths	M	44.0
Tailors	M	44.0
Bakers	M	43.8
Weavers	M	43.8
Rubber shoe makers	M	43.8
Labellers	F	43.7
Other personal service workers	F	43.6
Barbers	M	43.6
Truck drivers	M	43.6
Packers and wrappers	M	43.6
Finishers, wood	M	43.6
Finishers, textile	M	43.6
Tanners	M	43.6
Hat and cap makers	F	43.5
Cutters, leather	M	43.5
Commercial packers and wrappers	F	43.4
Teamsters	M	43.4
Stone cutters	M	43.4
Riveters and rivet heaters	M	43.4
Butter and cheese makers	M	43.3
Chauffeurs	M	43.3
Boiler firemen	M	43.3
Spinners	M	43.3
Inspectors N.E.S., graders[c]	F	43.2
Postmen	F	43.2
Waiters	M	43.2
Carpenters	M	43.2
Sewers and sewing machine operators	M	43.2

Occupation	Sex	Score[b]
Forest rangers	M	43.2
Lock keepers, canalmen	M	43.1
Wood turners	M	43.1
Labourers, mines and quarries	M	43.1
Sewers and sewing machine operators	F	43.0
Brick and stone masons	M	43.0
Textile inspectors	F	42.8
Machine operators, boot and shoe	F	42.8
Knitters	F	42.8
Guards, commissionaires	M	42.8
Winders, warpers, reelers	M	42.8
Glove makers	M	42.7
Cutters, leather	F	42.6
Elevator tenders	M	42.5
Bakers	F	42.4
Machine operators, boot and shoe	M	42.4
Launderers	M	42.4
Firemen, on ships	M	42.4
Cement and concrete finishers	M	42.4
Dressmakers and seamstresses	F	42.3
Carders and drawing frame tenders	M	42.3
Box and basket makers	F	42.2
Coopers	M	42.2
Sailors	M	42.1
Harness and saddle markers	M	42.0
Nuns	F	41.8
Class 7		
Cooks	M	41.8
Janitors	M	41.6
Laundresses, cleaners and dyers	F	41.4
Sectionmen and trackmen	M	41.4
Charworkers and cleaners	M	41.3
Paper box, bag and envelope makers	M	41.3
Sawyers	M	41.2
Longshoremen	M	41.2
Waitresses	F	41.2
Glove makers	F	41.2
Labourers	M	40.8
Cooks	F	40.5
Messengers	M	40.2
Shoemakers	M	40.2
Ushers	M	40.1
Janitors	F	40.0
Hawkers	M	39.3

a. Canada, Dominion os Statistics, Census of Canada, V, Table 21 and IV, Table 11 (Ottawa, 1953), Canada, Dept. of Internal Revenue, Taxation Statistics, 1951 (Ottawa, 1953). Additional Information supplied by D.B.S. Census Analysis Section.

b. The mean of the scores = 50, the standard deviation = 10 (calculated separately for each sex)

c. N.E.S. = not elsewhere specified.

Occupation	Sex	Score[b]
Housekeepers and matrons	F	38.9
Hotel cafe and household workers	M	38.8
Newsboys	M	38.7
Guides	M	37.8
Hotel cafe and household workers	F	37.8
Farm labourers	M	37.5
Lumbermen	M	37.4
Charworkers and cleaners	F	37.4
Fishermen	M	36.9
Bootblacks	M	36.8
Fish canners, curers and packers	M	36.2
Fish canners,curers and packers	F	36.0
Hunters and trappers	M	32.0

b. The mean of the scores = 50; the standard devlation = 10 (calculated separately for each sex).

c. N.E.S. = not elsewhere specified.

APPENDIX N

TEST OF DIFFERENCE BETWEEN MEANS

t-test

The formula used in testing the difference between the means of the criteria, and of the predictors for boys and girls, except for the age of school where the variances were significantly different, was the t-test for the significance of difference between the means for independent samples.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2/N_1 + S^2/N_2}}$$

where s^2 was the Combined Variance of the two.[1] For testing the difference between the means fo the age of school the Cox and Cochrane method was used. Here the s^2 was the separate variance of each population.[2]

---

[1] Ferguson, op. cit., p. 167

[2] Ferguson, Ibid., p. 171

APPENDIX O

TABLE XXXI

CORRELATION MATRIX FOR SOCIOECONOMIC VARIABLES, INTELLIGENCE AND READING TEST SCORES: GRADE SIX BOYS TRINITY BAY, NEWFOUNDLAND (N = 361)

Output
V = Vocabulary Socres
PC = Paragraph Comprehension Scores

Input
IQ = Verbal Intelligence
FO = Father's Occupation
ME = Mother's Education
SF = Size of Family
DA = Days Absent
TQ = Teacher's Qualifications
CE = Classroom Enrollment
AS = Age of School

V	PC	IQ	FO	ME	SF	DA	TQ	CE	AS	
100	77*	77*	37*	34*	-17*	-11	10	01	-02	V
	100	68*	24*	26*	-11	-09	01	-02	-02	PC
		100	26*	35*	-15	-13	14	05	-03	IQ
			100	34*	-08	-07	14	19*	-15	FO
				100	00	-09	05	04	01	ME
					100	04	01	-02	-02	SF
						100	-03	01	02	DA
							100	36*	-01	TQ
								100	-29*	CE
									100	AS

Decimal points are omitted.

*Those r's marked with an asterisk are significant. With an N of 361 and $r \geq .32$ is required for significance at .001 level, .23 at .01 level, and .16 at .05 level.

APPENDIX P

TABLE XXXII

CORRELATION MATRIX FOR SOCIOECONOMIC VARIABLES, INTELLIGENCE AND READING TEST SCORES: GRADE SIX GIRLS TRINITY BAY, NEWFOUNDLAND (N = 323)

Output
V = Vocabulary Scores
PC = Paragraph Comprehension Scores

Input
IQ = Verbal Interlligence
FO = Father's Occupation
ME = Mother's Education
SF = Size of Family
DA = Days Absent
TQ = Teacher's Qualifications
CE = Classroom Enrollment
AS = Age of School

V	PC	IQ	FO	ME	SF	DA	TQ	CE	AS	
100	79*	77*	27*	28*	-25*	-14	11	16*	-05	V
	100	73*	23*	23*	-18*	-07	02	13	-03	PC
		100	30*	30*	-20*	-16*	15	21*	-04	IQ
			100	30*	-05	-10	09	11	-07	FO
				100	-08	-19*	13	17*	01	ME
					100	07	03	-10	13	SF
						100	-08	-07	01	DA
							100	42*	-08	TQ
								100	-30*	CE
									100	AS

Decimal points are omitted

*Those r's marked with an asterisk are significant. With an N of 323 an $r \geq .32$ is required for significance at .001 level, .23 at .01 level, and .16 at .05 level.

APPENDIX Q

TABLE XXXIII

CORRELATION MATRIX FOR SOCIOECONOMIC VARIABLES, INTELLIGENCE AND READING TEST SCORES: GRADE SIX BOYS AND GIRLS, TRINITY BAY, NEWFOUNDLAND (N = 684)

Output
V = Vocabulary Scores
PC = Paragraph Comprehension Scores

Input
IQ = Verbal Intelligence
FO = Father's Occupation
ME = Mother's Education
SF = Size of Family
DA = Days Absent
TQ = Teacher's Qualifications
CE = Classroom Enrollment
AS = Age of School

V	PC	IQ	FO	ME	SF	DA	TQ	CE	AS	
100	79*	78*	31*	30*	-21*	-11	09	06	-02	V
	100	72*	22*	23*	-14	-07	00	03	00	PC
		100	27*	32*	-17*	-13	13	11	-01	IQ
			100	32*	-07	-09	12	15	-11	FO
				100	-04	-14	08	10	01	ME
					100	05	02	-05	05	SF
						100	-06	-04	02	DA
							100	39*	-05	TQ
								100	-30	CE
									100	AS

Decimal points are omitted.

* Those r's marked with an asterisk are significant. With an N of 684 an r $\geq$ .32 is required for significance at .001 level, .23 at the .01 level, and .16 at .05 level.